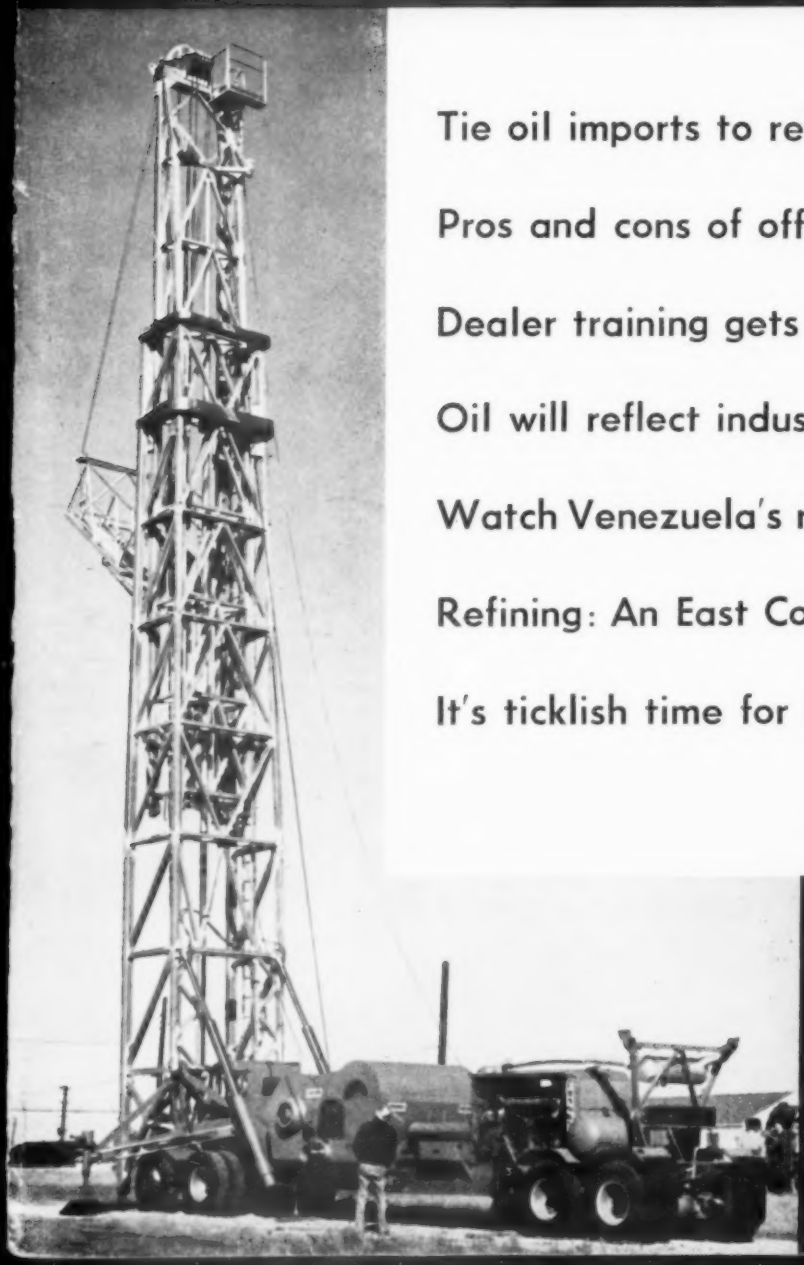
PETROLEUM WEEK

OCTOBER 5, 1956

■ A McGRAW-HILL PUBLICATION



Tie oil imports to refinery runs? 9

Pros and cons of offshore terminals 33

Dealer training gets new impetus 36

Oil will reflect industrial upswing 38

Watch Venezuela's refineries grow 40

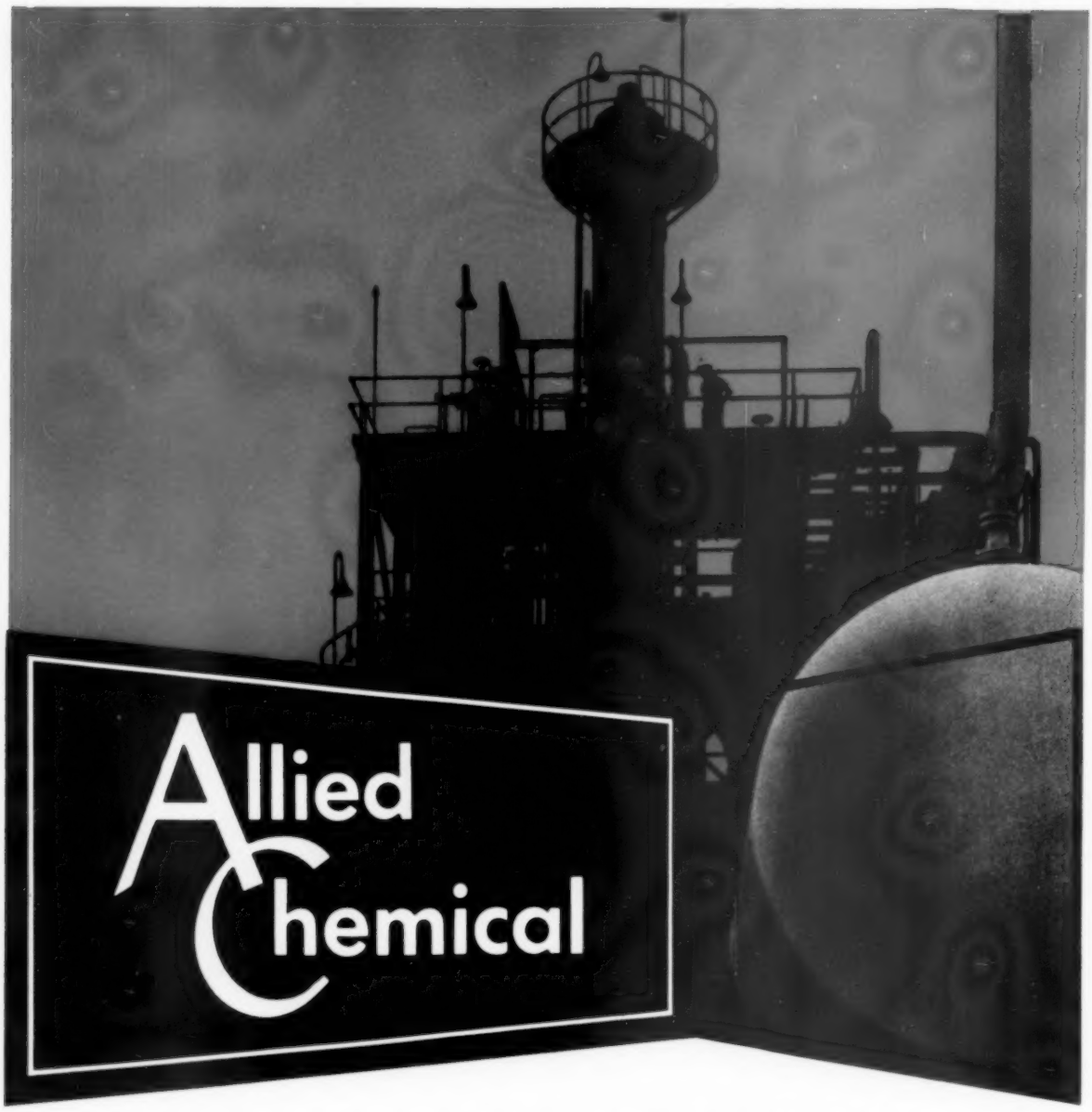
Refining: An East Coast fight brews 48

It's ticklish time for heating oils 51

Price 35 Cents

High costs are really putting drillers in a tight spot 20

Aluminum makers think they can help. Examples: rig (left), drill pipe, line pipe 13



ETHANOLAMINES

Treating gas with mono or diethanolamine? Allied's Orange, Texas, plant—most modern in the industry—can supply you with ethanolamines consistently above standard specifications. Shipments in tank cars, tank trucks or 55-gallon drums available from Orange, Texas. Nationwide stocks for delivery by tank truck and 55-gallon drums. Phone or write for samples, quotations, literature, technical service with no obligation.

Dept. EA 2-22-3

Allied Chemical
NITROGEN DIVISION

40 Rector Street, New York 6, N. Y.

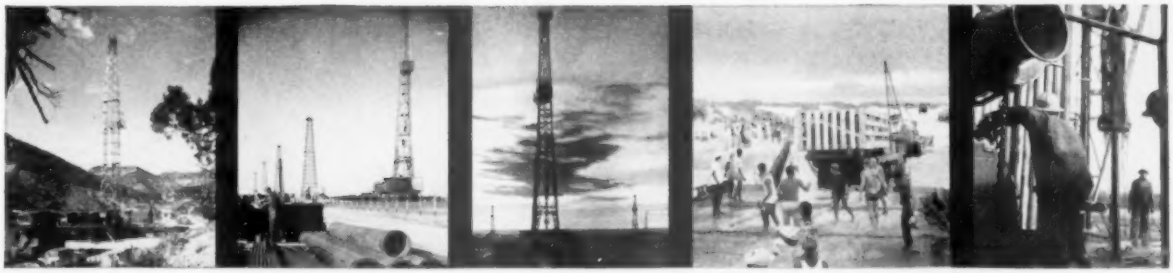
Ethanolamines • Ethylene Oxide • Ethylene Glycols • Urea • Formaldehyde • U. F. Concentrate—85 • Anhydrous Ammonia • Ammonia Liquor • Ammonium Sulfate • Sodium Nitrate • Methanol • Nitrogen Solutions • Nitrogen Tetroxide • Fertilizers & Feed Supplements

Sinclair
makes important offshore discovery

UNDER THE DEEP WATERS of the Gulf of Mexico, 42 miles out from the shore, Sinclair Oil & Gas Company has found an important new oil field. The discovery well was the first drilled on a 10,000-acre lease owned equally by Sinclair and three other companies.

To increase the Company's production of crude oil, Sinclair drilling rigs are busy this year on the prairies of Canada, the East African veldt of Somalia, deep in Venezuela, and throughout the great Mid-Continent, Rocky Mountain and Gulf Coast areas of the United States.

In the first half of 1956, Sinclair's total net production of crude oil and natural gas liquids rose to a new high of 166,664 barrels daily. Sinclair continues to increase its crude oil production at a faster rate than the oil industry generally.



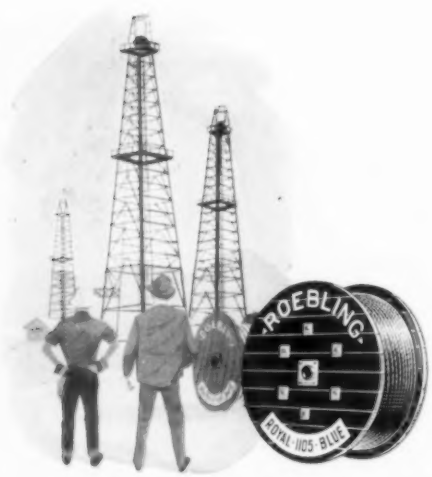
SINCLAIR

A Great Name in Oil

SINCLAIR OIL CORPORATION • 600 FIFTH AVENUE • NEW YORK 20, N. Y.

faster

Royal Blue has won acceptance *faster* than any other wire rope in Roebling history



John A. Roebling's Sons Corporation, Trenton 2, N. J., Subsidiary of The Colorado Fuel and Iron Corporation BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 2340 GLENDALE-MILFORD RD., EVENDALE • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • PITTSBURGH, 1723 HENRY W. OLIVER BLDG. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, 19 RECTOR ST., NEW YORK 6.

PETROLEUM WEEK

Publisher—Harry L. Waddell
Editor—Herbert A. Yocom

•

Senior Editors—Glenn Green, Jr. (Houston), W. M. Jablonski, J. P. Mosher, Jr., Robert E. Spann, John Barton, LeRoy Menzing

News Editors—James M. Sutherland, Clyde LaMotte

Assistant Managing Editor—Richard M. Machol

Assistant Editors—Halsey Peckworth, Georgia Macris, Ade Ponikvar, Leo M. Murray, John L. Paluszek; *Chicago*—Frank Holman; *Detroit*—Holger Ridder; *Houston*—Marvin Reid; *Los Angeles*—Richard Elwell; *Tulsa*—William P. Sterne

Presentation Director—William A. Caperell, Jr.

Editorial Assistants—Larry Christiansen, Jr., Betty Deane Suiter, Eugene L. Bush (Houston), Randall Walthius (Chicago)

•

Washington News Bureau—George Bryant, Manager; Glen Bayless, Ernest Conine, A. R. Patla, Roy Calvin, N. B. Musselman, Dean Reed, A. E. Adams, Jay Flocken, Boyd France, Sam Justice, Arthur Kraft, D. O. Loomis, Gladys Montgomery, A. L. Moore, Seth Payne, M. A. Reichek, Craig Richter, Caroline Robertson, Vincent Smith

Domestic News Bureau
Atlanta—A. R. Henry, Frances Ridgway; *Cleveland*—Robert Cochran, Gus J. Dallas; *Los Angeles*—John Shinn; *San Francisco*—Margaret Ralston; *Correspondents*—Albuquerque, Austin, Bakersfield, Bismarck, Casper, Cheyenne, Cincinnati, Corpus Christi, Dallas, Denver, Great Falls, Honolulu, Jackson, Lake Charles, Memphis, Midland, Minneapolis, Montreal, New Orleans, Oklahoma City, Philadelphia, Phoenix, Pittsburgh, Portland (Ore.), Sacramento, Salt Lake City, San Diego, Seattle, Shreveport, Spokane

Foreign News Bureaus
Editor—John Wilhelm; *London*—William J. Coughlin; *Paris*—Robert E. Farrell; *Bonn*—Gerald Schroeder; *Rio de Janeiro*—Peter Weaver; *Mexico City*—John H. Kearney; *Tokyo*—Dan Kurzman; *Melbourne*—Alicja Grobtuch; *Correspondents*—Amsterdam, Baghdad, Beirut, Bogota, Bombay, Buenos Aires, Cairo, Caracas, Edmonton, Havana, Istanbul, Johannesburg, La Paz, Lima, Manila, Ottawa, Regina, Rome, Vancouver, Vienna, Winnipeg

Economics Staff—Dexter M. Keezer, Director; Robert P. Ulin, T. C. Boyden

•

Business Department
Advertising Sales Manager—Ervin E. DeGraff; *Business Manager*—Richard H. Loyer; *Sales Promotion Manager*—N. F. Cullinan; *Advertising Service Manager*—John E. Thompson; *Assistant to the Publisher*—George Reid (Houston)

•

Other McGraw-Hill Petroleum Publications
NATIONAL PETROLEUM NEWS
PETROLEUM PROCESSING
PLATT'S OILGRAM NEWS SERVICE
PLATT'S OILGRAM PRICE SERVICE

Vol. 3, No. 14—PETROLEUM WEEK—October 5, 1956
Number of copies of this issue printed: **30,254**

Published weekly by McGraw-Hill Publishing Co., Inc., James H. McGraw, (1860-1948), Founder.

Executive Editorial, and Advertising Offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Publication Office, 871 N. Franklin St., Chicago 10, Ill. Donald C. McGraw, President; Paul Montgomery, Executive Vice President; Joseph A. Gerardi, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division, Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; J. E. Blackburn, Jr., Vice President and Circulation Director.

Subscriptions: Address correspondence to Petroleum Week, Subscription Service, 330 W. 42nd St., New York 36, N. Y. Current single copies, 35¢. Subscription rates, all countries: $3 for one year, $4 for two years, $5 for three years. Orders must indicate company, industry division, and position.

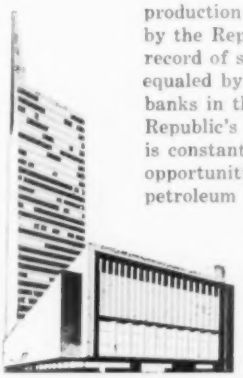
Second class mail privileges authorized at Chicago, Ill. Printed in U. S. A.

Copyright 1956 by McGraw-Hill Publishing Co., Inc. All rights reserved.

BEHIND MILLIONS OF BARRELS OF PRODUCTION

Financing by the Republic

The nation's oil reserves are millions of barrels richer because of production loans made by the Republic. With a record of service to oil men equaled by few other banks in the nation, Republic's Oil Department is constantly seeking opportunities to serve the petroleum industry.



WHAT CAN WE DO FOR YOU?

REPUBLIC National BANK of Dallas

MEMBER FEDERAL DEPOSIT INSURANCE CORP.

CAPITAL AND SURPLUS $70,000,000
LARGEST IN THE SOUTH

Dowell engineers use modern equipment to clean up pay zone with Mud Acid before a fracturing job.

Mud Acid clears the way for fracturing

Mud-caked formation surfaces can balk every fracturing effort, resisting the passage of fluids and causing excessive treating pressures.

Dowell engineers have a solution to many such problems—a spearhead of Mud Acid. With its mixture of hydrochloric and hydrofluoric acids, Mud Acid is designed to dissolve clay minerals and to prevent the swelling of bentonitic materials. It also dissolves any material soluble in hydrochloric acid, such as limestones and dolomites.

When Mud Acid has done its work, fracturing fluids are able to enter the formation at lower pressures and increased injection rates can be obtained. Mud Acid contains a Dowell inhibitor to help protect well equipment from acid corrosion, even at temperatures above 300°F. Special additives help prevent emulsions.

For more information or service, call any of the 165 Dowell offices in the United States and Canada; in Venezuela, contact United Oilwell Service. Or write to Dowell Incorporated, Tulsa 1, Oklahoma, Dept. J-75.

services for the oil industry **DOWELL**

A SERVICE SUBSIDIARY OF THE DOW CHEMICAL COMPANY

60-Second Summary / WHAT'S HAPPENING IN OIL

AT-A-GLANCE PETROLEUM WEEK Copyright

October 5, 1956

dept/INDEX

Production	20
Refining	48
Transportation	33
Marketing	36
Washington	6
Key Prices	50
The Market Trend	51
Statistics	52
Editorial	56
International	40
Personals	53
Trend of Business	38

There's talk of limiting imports to a specified percent of domestic refinery runs. Proponents say this would be a fairer, more workable way than current efforts to restrict imports voluntarily to their 1954 ratio to domestic production. . . . p. 9

•

The imports problem may wind up directly in the President's lap. Flemming points out that the law empowers the President, not ODM to institute direct controls.

•

Lebanon's government now stands alone in its tax dispute with Iraq Petroleum Co. Syria made that clear this week. Meanwhile, IPC, making good its warning (page 41), has started a 24-in. pipeline that will end in Syria instead of Lebanon. And IPC says that if Lebanon should exert "extreme measures," it may suspend all operations there.

•

There's a growing move to get the U.S. government to take a strong stand on the sanctity of international contracts. M. J. Rathbone, Jersey Standard president, said in Texas this week that the U.S. "should do everything possible" to get other nations to adopt this view.

•

The U.S. is getting its reserve tankers ready, just in case. It is pulling all 18 of its T-2 tankers out of mothballs, sending them to shipyards for inspection. . . . p. 10

•

Use of aluminum products in all segments of the oil industry is growing. Reynolds Metals Co. has even come up with an experimental 6,000-ft. aluminum drill string—one of the latest, and most startling, applications of the lightweight metal. . . . p. 13

•

Refiners are going to face tougher competition in the big East Coast markets. Two new plants with 165,000 b/d of capacity will soon be on stream in the East. Two more, totaling 60,000 b/d, are projected. The impact will be felt particularly on the Gulf Coast, largest supplier to the East Coast. . . . p. 48

•

Rigid prices and rising costs are causing a slowdown in drilling activity. The price-cost squeeze is forcing some contractors to stack rigs rather than bid on submarginal jobs. Others claim they are going broke by taking on low-margin deals just to meet expenses. . . . p. 20

•

Venezuela is looming larger in the world refining picture. New plants going on stream, together with others being built or planned, may make Venezuela the world's third largest refining nation. . . . p. 40

Looking Ahead in Washington

McGraw-Hill
Washington
Bureau

October 5, 1956

Look for a big step-up in government loans to small business. This is what's behind it: Ike's closest economic advisers argue that tight-money policies are hurting small business badly. They concede that tight money is here to stay for some time, that it's needed to check inflation while long-range heavy capital expansion is under way. Their first idea is to ladle out more small business loans.

Already, the Small Business Administration has made more than twice the loans in the first half of 1956 as in the same period last year. Now it's started to merchandise its lending program even more, is playing up its fund of $50-million available for small firms. Some critics inside the Administration ask how Washington can keep tight money on one hand while pouring out loans on the other. Ike's advisers answer that funds involved in small-business aid are peanuts—only in the millions—compared to the economy in general.

Small oil firms—producers, refiners, distributors—will be in on the stepped-up lending program. The industry is represented on SBA's National Council of Consultants, which is having a hand in the new plans. Lloyd M. McAdoo, L. M. McAdoo Oil Properties, Seagraves, Tex., and L. T. White, Cities Service manager of business research and education, are members.

•

New middle east pipeline projects are under heavy study by industry and government planners. But nothing definite has been set yet. Insiders say oil companies in the middle east will decide by Jan. 1 whether to build a new line across Turkey to the Mediterranean or to buy more tankers. The much-talked-of plan for a line from the Red Sea to the Mediterranean across Israel is out of the question (page 47).

•

Fair employment is making progress in refining: The annual report of the President's Committee on Government Contracts says, "Most of the major refining companies on the Gulf Coast either have adopted the equal-job-opportunity policy . . . or are well along in their preparation for that move." The object is to provide "free mobility of Negro employees out of the labor department upward . . ."

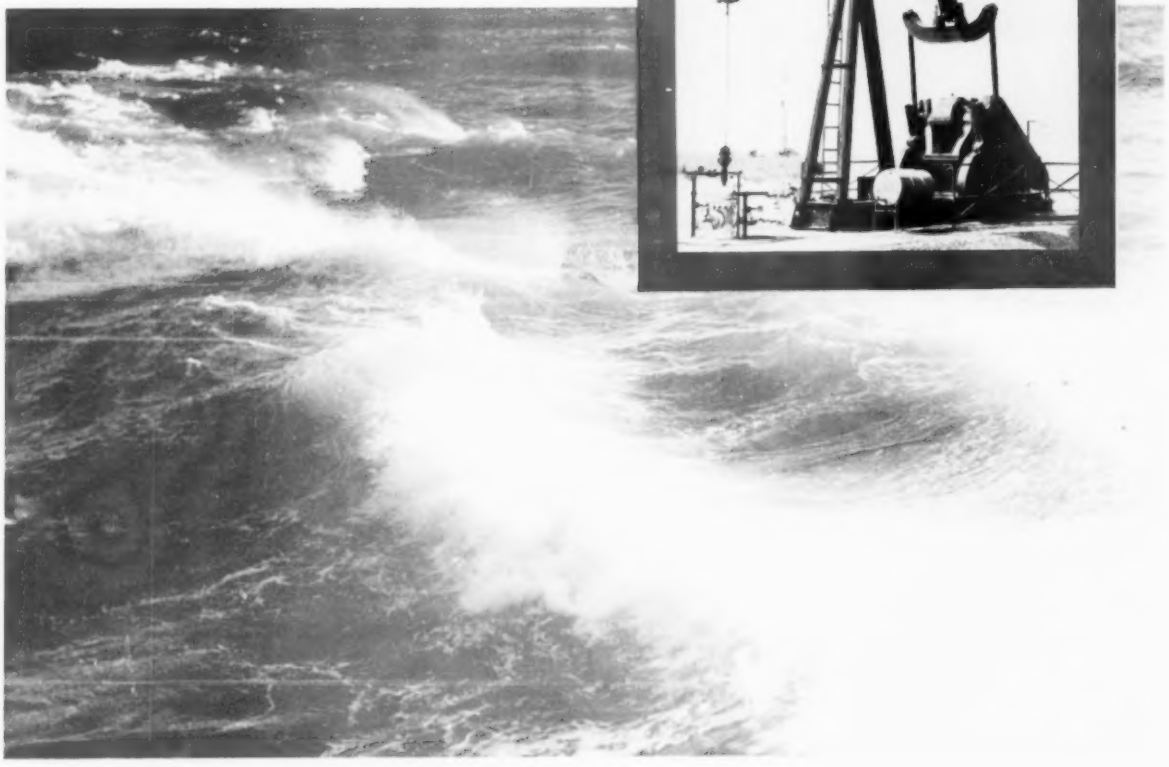
Nevertheless, no complaints against refiners have been formally closed, although progress in upgrading Negroes has been made in every complaint case except one. That one is the Cities Service refinery at Lake Charles, La. And confidential informants say the stumbling-block to progress at Lake Charles is not the company, but the metals trades union.

Numerical gains are small. One major, for instance, has upgraded 25 to 40 Negroes, another fewer than 10. But the committee says its prime concern is to get the principle established, figuring that numerical progress will come along more rapidly in the future.

•

John L. Lewis has decided that oil and gas aren't such a threat to coal after all, particularly in supplying fuel to electric utilities. The United Mine Workers leader is optimistic over the long-range outlook for coal, saying that it is gaining more and more of the electrical energy market. And he predicts that neither gas nor oil will be able to take over any of the new market after 1956. It's an about-face from his earlier calls for an outright fight against competitive fuels.

OIL WELL
with an
18,000
gallon/day thirst



Pumping water into underground oil-bearing formations to force up more oil, more economically, is a big operation in the petroleum industry—and getting bigger all the time. Such water flooding projects now require millions of gallons of water per day, and most of it must be chemically treated to prevent plugging, corrosion, and scaling in the formation, in wells, and in connected equipment. Obviously, these are jobs for Nalco—the world's largest water treating service organization . . . Jobs that Nalco is doing efficiently, and, equally important: economically.

A point to remember is this: whether for water flooding, steam generation, cooling, or process . . . poor water costs much more than Nalco treatment.

NATIONAL ALUMINATE CORPORATION

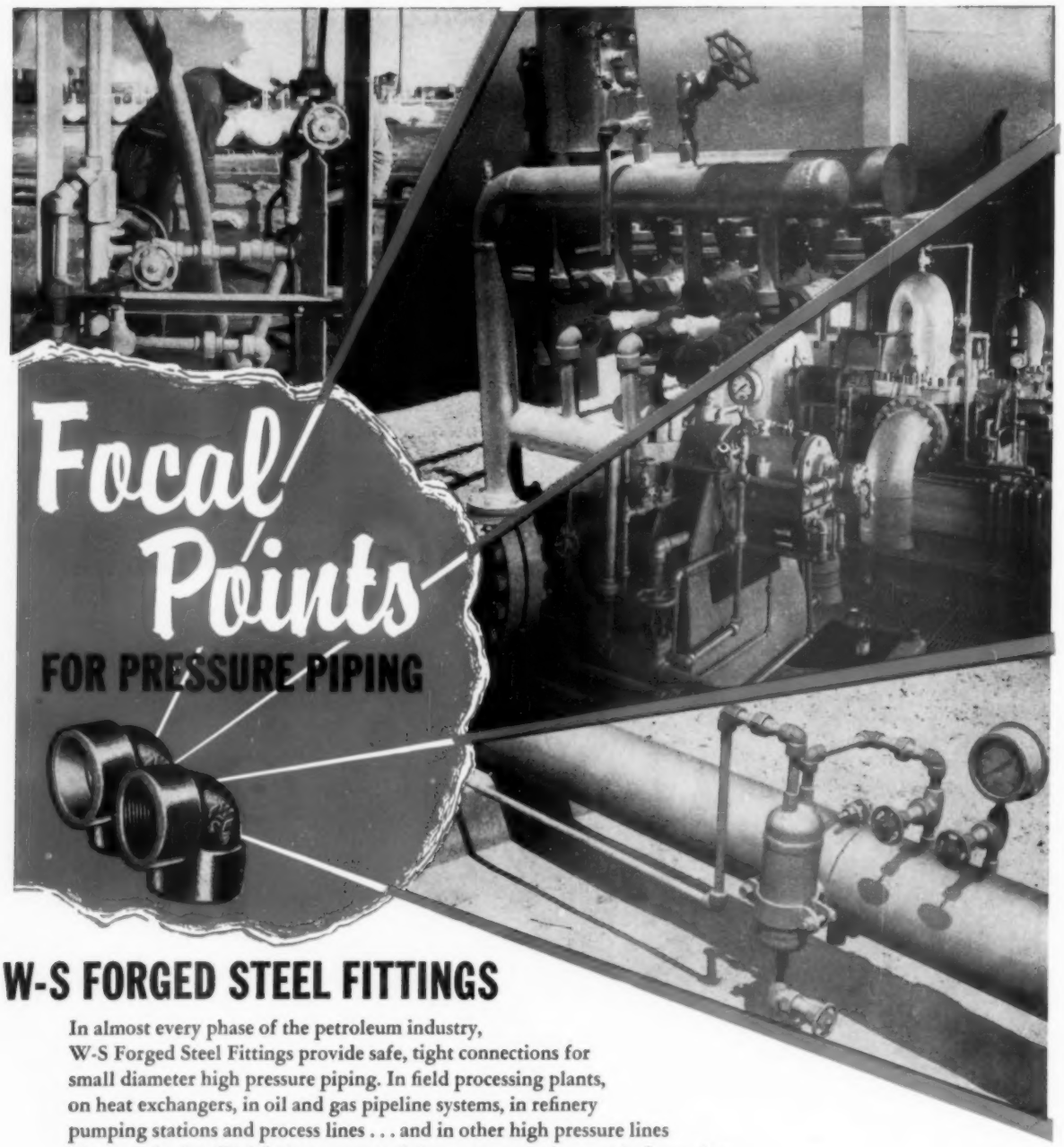
6300 West 66th Place • Chicago 38, Illinois • POrtsmouth 7-7240

CANADA: *Alchem Limited, Burlington, Ontario*
BRANCHES IN SPAIN, ITALY, AND WEST GERMANY

THE *Nalco*® SYSTEM

SERVING INDUSTRY THROUGH PRACTICAL APPLIED SCIENCE

WATER TREATMENT . . . PAPER MILL PROCESS CHEMICALS
OIL WELL AND REFINERY CORROSION CONTROL . . . ION EXCHANGE
WEED AND BRUSH CONTROL . . . SLIME AND ALGAE CONTROL
PROCESS ANTIFOAMS AND COAGULANTS . . . PETROLEUM CATALYSTS
COMBUSTION CATALYSTS . . . FUEL OIL STABILIZATION



W-S FORGED STEEL FITTINGS

In almost every phase of the petroleum industry, W-S Forged Steel Fittings provide safe, tight connections for small diameter high pressure piping. In field processing plants, on heat exchangers, in oil and gas pipeline systems, in refinery pumping stations and process lines . . . and in other high pressure lines 1/8" to 4" in size, W-S fittings protect piping systems against costly down time.

They are drop forged from solid bars for extra strength and toughness . . . and they're safety-factor designed.

W-S Forged Steel Fittings are available in screw-end and socket-welding types in carbon, stainless and alloy steels.

For more information send today for our informative catalogs.

W-S FITTINGS DIVISION

HKP H. K. PORTER COMPANY, INC.
Roselle, New Jersey

New Approach to Imports Posed

The imports problem is a tough nut to crack. The present voluntary system, aimed at keeping imports down to the 1954 ratio of imports to domestic production, simply hasn't worked well. Some importers haven't complied, and the government itself has altered the program.

It is becoming increasingly obvious that some changes in policy are about to be made.

The pressure for action is growing as imports continue to mount. The Cabinet Fuels Policy Committee was studying the problem anew this week. And industry leaders were discussing new approaches.

The big question confronting both industry and government is this: What would be a fair and practical method for restricting imports? And would it require some form of direct control?

Control of crude oil imports through some method geared to refinery throughput is being discussed in oil circles and in Washington.

Advocates of such a plan realize that it is not a cure-all for import ills. But at the same time, they feel that it is more workable than anything that has been suggested thus far.

They support this thinking by pointing out what has happened under the present system, which grew out of the so-called defense amendment to the Reciprocal Trade Agreements Act.

The intent of Congress in the defense amendment was to see that imports did not exceed the 1954 relationship to domestic production.

Over-all imports at that time were 16.6% of domestic production, with crude oil imports being slightly in excess of 10%.

Defense Mobilizer Arthur Flemming attempted to bring crude imports back into the proper relationship late in 1955 when he asked importers to reduce the amount of foreign oil they were bringing into this country by 7%.

However, he exempted Western Hemisphere imports, and crude being imported on the West Coast.

These exemptions, independent producers contended from the start, made the formula unworkable.

While some companies have gone along with Flemming on each request, the industry, as a whole, has not. This is reflected in the fact that total imports now approximate 20% of domestic production.

The fact that past attempts to establish a proper imports formula have failed to work explains why some within the industry, including some of the larger companies, are giving consideration to the refinery control approach.

They admit that it boils down to a quota, which always has been objectionable to many within the industry. But as one industry leader remarked: "I don't know of a better way to do it."

The thing that imports geared to refinery throughput would accomplish is that it puts the responsibility for control on the refiner.

After all, proponents of the plan point out, crude is imported to be refined.

Domestic and foreign crude are competing for the refinery market. So it is at this level, they say, that controls must be invoked if crude imports are to be kept in the proper relationship with domestic production.

Control at the refinery level would be on a percentage basis.

The proper percentage level is something that Flemming or the cabinet committee on energy resources would have to work out.

Refinery throughput has been around 8-million b/d during most of this year. At the same time, domestic production has averaged about 7-million b/d.

Crude imports are running about 1-million b/d. This means that crude imports are accounting for one-eighth of the nation's average refinery throughput, and one-seventh of domestic production.

Under the refinery control plan, if demand should warrant an increase in throughput, both domestic and foreign oil would each supply a proportionate share.

For instance, suppose ODM should decide that the present 8:1 ratio is the proper one. And suppose refinery runs are to be increased by 10% to average 8.8-million b/d.

This would mean an increase in domestic production of 700,000 b/d, to 7.7-million b/d. For imports, the present level of 1-million b/d would increase by 10% to 1.1-million b/d.

This would keep imports at the same relationship: one-eighth of refinery throughput and one-seventh of domestic production.

Those favorable to the idea of controlling crude oil imports on the basis of the percentage of refinery throughput feel that it would be helpful to the importer.

In the first place, they point out that throughput is more or less a fixed figure, that companies schedule such operations months in advance.

This would enable the importers to work out their import schedules accordingly.

Fluctuation through unexpected rises and declines in demand could be adjusted quarterly.

Such a plan also would provide for the newcomer in the import picture.

Any refiner starting to import for the first time would know the amount of crude he could bring in.

His imports would be limited to whatever percentage is prescribed by the government for the industry.

The refinery-control approach would be helpful not only to the importer, but also to the domestic producer.

He would be able to participate in whatever increase occurs in over-all demand.

Plan War Oil Agency

The government is planning to recruit an "executive reserve" of oil industry officials who should serve in any future emergency oil agency.

Hugh Stewart, director of Interior's Office of Oil & Gas, says the drive will begin soon. It was to have started in August, he says, but was delayed because of the Suez crisis.

The purpose is to have men ready to take over key positions instantly to mobilize the industry to meet war or a similar crisis.

The oil and gas executive reserve will be patterned after similar groups already set up in the Office of Defense Mobilization and in the Commerce Dept.'s Business & Defense Services Administration.

Defense officials feel that such advance planning is needed because this nation might be the initial target in future hostilities. If so, there would be little or no time for developing preparedness measures.

Specific individuals will be asked to join the reserve now for specific assignments. First preference will be given to former officials of PAD and PAW, because of their experience in government operations. However, others will be chosen as needed to round out the organization.

As many as 1,000 oil men may be invited to participate in the program. In earlier planning, the aim had been to select only a small group—perhaps about 50—and let the remaining number be added as emergency conditions required.

However, it was decided to increase the number to allow adequate representation of all industry segments, and because such a wartime agency would need at least 1,000 persons. (PAW reached a peak of 1,500 to 1,800 during World War II.)

It is likely that more than one person will be chosen for each key position. That is, three different men may be earmarked for the job, say, of director of refining. This is to make sure that someone would be available in case the first man chosen might be unavailable at the time of an emergency.

An alternate, less complex procedure may be used. In it, the reservists would be put in general categories, such as production, refining, transportation, etc. Then the personnel would be drawn from those categories for specific assignments as needed.

The reservists will be assembled in Washington, or some other central point, for periodic seminars on mobilization planning. This probably will also include participation in "war games" at a secret government location center.

All this may take up as much as two weeks a year of the individual's time.

In addition, the Office of Oil & Gas will keep in touch with its reservists, sending them quarterly reports on division activities and on government mobilization planning in general as it continues to develop.

It is unlikely that the reservists will have any function—aside from training—until the actual declaration of a national emergency.

Tanker 'Demothballing' Starts

The government is pulling all 18 of its T-2 tankers out of the "mothball" reserve to ready them for possible use.

Nine of the vessels were towed to shipyards this week. Six of these were removed from the James River reserve, two of which were taken to Newport News, Va., two to shipyards at Baltimore, one to Hoboken, and one to Staten Island. The remaining three, from Susian Bay, were routed to West Coast yards. Plans have not been completed for moving the 9 other T-2 tankers.

The vessels will be put in drydock first, to determine what repairs will be needed.

After the examination has been made, the government will decide whether to go ahead with repairs.

It is generally estimated that it will take from three to four weeks to get the ships in shape.

The decision on whether to put the tankers into actual service is likely to be influenced by developments in the Suez crisis.

If there is any substantial reduction in traffic through the Suez canal, the demand for tankers would become heavy.

If the mothballed tankers are activated, they will probably be used by the Military Sea Transportation Service to haul oil for military needs. This would enable MSTS to release some private tankers it now has under charter.

The 18 T-2 tankers in the government reserve include 12 obtained in the trade-in-and-build program, and six that were confiscated. These were tankers built during World War II.

The government has 28 other tankers in the reserve fleet. At present, it is not planned to ready these ships for use.

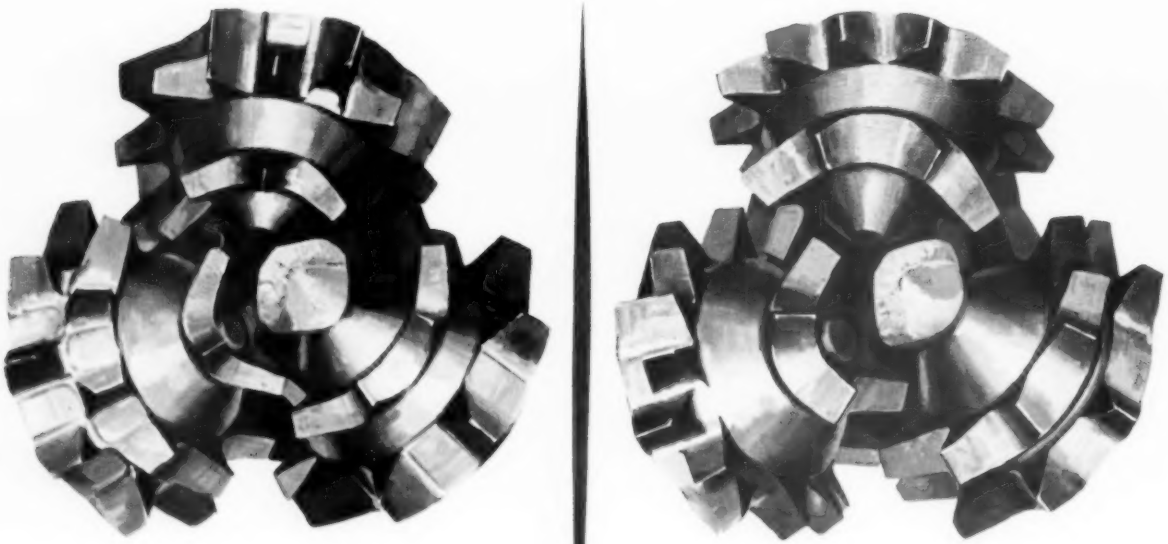
Ironing Out the Wrinkles in Offshore Plan

These four men have played—and are still playing—key roles in drafting a compromise plan to permit resumption of drilling and some new leasing in the disputed area off Louisiana's coast. J. Ruel Armstrong (left), the Interior Dept.'s solicitor, is chief spokesman for the U.S. Louisiana is represented by (l. to r.): W. Scott Wilkinson, special assistant state attorney general; Austin Lewis, operator representative, and Morris Wright, member of the State Minerals Board.

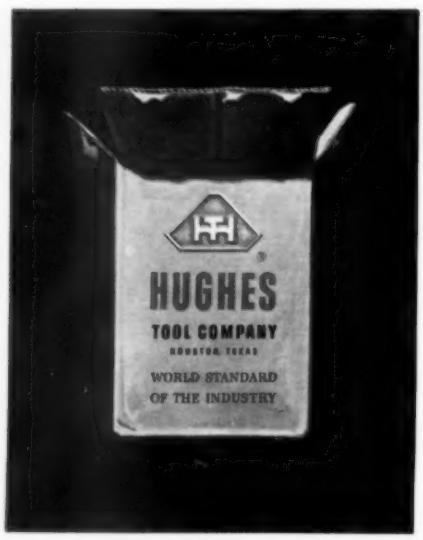
What about the bits for this location? This is wildcat territory! But you know... *from long experience*... that Hughes bits of the right sizes, types and design will be ready for delivery before you spud in.

The same is true of the other fifty thousand or more rotary wells to be drilled during the next twelve months. By working closely with the industry the Hughes organization determines, *accurately and far ahead of time,* the bit requirements for each drilling area... and the wildcats, too!

THEY LOOK ALIKE ... but



there's a difference in their performance



The two rock bits pictured here are excellent examples of the fact that bits that may look alike don't always perform alike.

Both bits are similar in design. But changes have made the second bit a faster cutting, better-performing, more versatile bit... capable of drilling a wider range of formations.

Hughes bits are undergoing constant improvement based on continuing research and the world's greatest rock bit experience—over one billion feet of hole drilled in the past 47 years. That's why you can depend on HUGHES bits to consistently drill more hole faster!

LIGHT WEIGHT and ease of handling by smaller crews, using fewer tools, are among the advantages being cited as . . .

Aluminum Takes Bold Steps Into Oil

Aluminum is finding its way into wider use in drilling, production, processing, and transportation. The big reason: operating economy.

Use of aluminum products by the oil industry has been increasing steadily during the past several years. It's been showing up in the oil fields, in processing plants, in pipelines, and elsewhere.

Right now, nature's most abundant metallic element seems to be headed toward new, significant oil country uses.

Some of the many present uses include aluminum pipe for water supply, natural gas lines, gathering systems, water floods, storage-to-tank transfer piping, lease tank venting, and temporary casing; for platforms on workover and service rigs, for walkways and railings; for shot-hole rigs; for jacketing on insulated vessels and on piping; for bodies for tank trucks; for lease tanks and storage tank roofs; and for general metal applications on offshore drilling rigs. The list is much longer.

Aluminum is making these gains because it is light in weight, rust-resistant, nonsparking, durable, and workable. All of these characteristics spell savings.

Additional advantages: Aluminum becomes stronger at low temperatures, whereas steel becomes brittle. It has unusual thermal qualities, which allow it to be both a good conductor and a good insulator. It has good reflectivity and a clean, attractive appearance.

The three big aluminum producers —Aluminum Co. of America, Kaiser Aluminum & Chemical Corp., and Reynolds Metals Co.—are stepping up their research programs, trying to come up with new oil-country uses for aluminum.

Oil's use of aluminum has been growing fast, but, say aluminum men, the industry "ain't seen nothin' yet." Up to now the uses have been interesting, but volume has been comparatively light. Now the "big push" is about to get under way.

A check shows that all three of these major aluminum producers are actively engaged in experiment or development of new products for use in oil. Here are some of the things being done:

- Alcoa is experimenting with aluminum sucker rods, though none are commercially available yet. The company also is making an economic study under actual field conditions of an all-aluminum tank battery, in contrast to all-steel construction.
- Kaiser is preparing a manual showing contractors or refiners how to make their own aluminum jacketing for various uses, such as on insulated vessels and piping. Kaiser also is working on new applications of aluminized steel for sour crudes, and of alloy 5086, highest-strength aluminum alloy permitted so far by the American Society of Mechanical Engineers for welded construction. Alloy 5086 has been used for welded tank trucks, for unfired pressure vessels, and elsewhere.
- Reynolds has just put into service a 6,000-ft. string of aluminum drill pipe, is trying to perfect aluminum sucker rods, is pushing development of aluminum drilling rigs, is hunting for a sure-fire method of plastic-coating aluminum line pipe for salt-water disposal programs.

Reynolds is a particularly active example of the way aluminum companies are going after the potentially heavy petroleum-chemical market.

Reynolds has kicked off a strong sales and promotion effort aimed to bring in an $80-million annual slice of the oil and chemical market.

Here are some of the things aluminum is doing in oil:

I. Drilling and Production

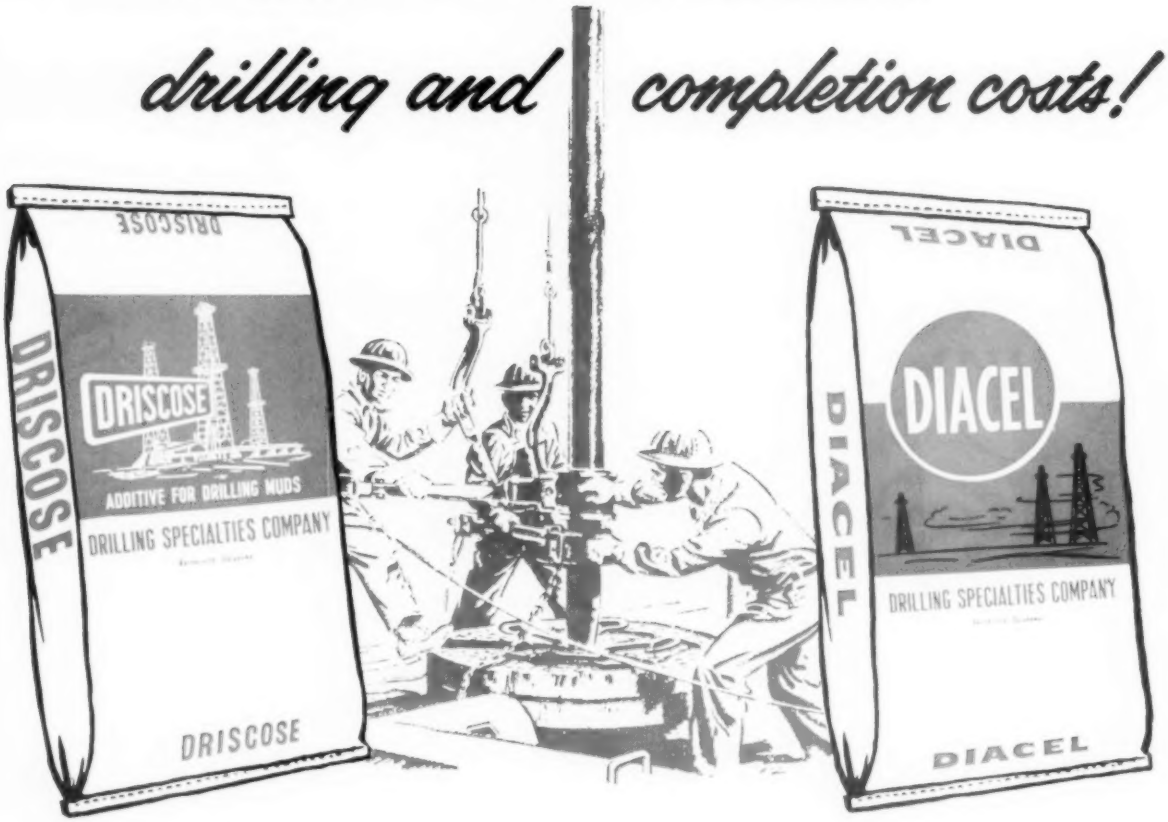
Reynolds' use of aluminum drill pipe is by far the most startling in its immediate applications.

The 6,000-ft. string of aluminum drill pipe is now in use on a rig operating near Ft. Smith, Ark. It is being used on a company rig working for the oil and gas division of Reynolds Mining Co., a subsidiary of Reynolds Metals Co.

Made up in standard 30-ft. joints, the 4-in. pipe has an 80,000-psi. yield strength. It weighs two-thirds less than comparable steel drill pipe. However, steel tool joints are being used.

Reynolds is going to drill with the string "until it fails." But a company

Use them BOTH *to reduce drilling and completion costs!*



DRISCOSE* **saves time, saves money!** DRISCOSE, a high-stability, high-purity CMC (99.9%), allows you to control water loss, viscosity and gel strength for optimum drilling conditions. At the same time, low pH, low solid DRISCOSE emulsions give you higher penetration rates. You save on operating time and on expensive bit replacements. DRISCOSE also helps avoid tight hole troubles. Consult our technical representative about your particular mud problems. Let him prove that DRISCOSE can save you money on your mud program.

DIACEL** **CEMENT SYSTEMS can save up to ¾ of the cement ordinarily required.** Using ordinary portland cement, you can control water loss and thickening time with a DIACEL Cement System. Versatile DIACEL systems give you a choice of densities from 10.5 to 17 pounds per gallon . . . to suit wells of all depths and wide temperature range. You can save up to 25% on cementing costs and get better drilling and completion work with a DIACEL System. Write for free technical handbook or call our technical representative.

*Driscose is a trademark for 99.9% pure Sodium Carboxymethylcellulose.

**A TRADEMARK

DRILLING SPECIALTIES COMPANY

BARTLESVILLE, OKLAHOMA

spokesman says: "We are confident of the results."

Reynolds has reason to be. It previously had drilled more than 15 holes successfully to around 2,500 ft., in Kentucky, with a string of steel and aluminum pipe in combination. But only 500 ft. of aluminum pipe was used in these strings.

The Kentucky wells were Reynolds' first experiments with aluminum as drill pipe. Eight wells reportedly were producers. During drilling, the aluminum pipe was used at the bottom and at the top of the string, and intermixed with the steel joints.

Reynolds reports it had no failure of the aluminum during the operation.

A question that worried Reynolds in the beginning—the effect of caustic mud on the aluminum—apparently turned out to be minor. The mud turns the pipe black, but the attack of the caustic on the pipe apparently stops at that point.

Reynolds' optimism on aluminum drill pipe isn't shared by most drillers.

A PETROLEUM WEEK check of drillers and operators in the Mid-Continent brought these responses:

"Drill pipe is the last thing on this earth that I would consider making out of aluminum. A driller needs weight on the bottom of the hole."

"Aluminum has good tensile strength, but I can't see it used for drill pipe."

"I don't know how it could stand the torque."

If Reynolds does succeed in developing a completely practical aluminum drill pipe, the cost and operational impact on drilling would be tremendous.

Much of the power on drilling rigs is there to pump mud and to hoist the heavy steel drill pipe. In this era of ever-deeper drilling, the weight of the pipe is a major problem. Trimming two-thirds of the dead weight would reduce the power needed for hoisting.

The strain on masts would be lessened, permitting lighter construction. Dropping power and mast weight would reduce the over-all rig weight, making the rig more portable and reducing the number of trips per move.

Right now, however, aluminum "oil country pipe" is making its biggest gains for temporary oil, gas, and water lines. Aluminum producers are hammering hard on these advantages:

Light weight. From the basic fact that aluminum line pipe is about one-seventh the weight of steel pipe of comparable size, stem several benefits, including speed in coupling and uncoupling.

Reynolds claims that aluminum can save 80% to 90% in man-hours in laying and picking up pipe—approximately 10 man-hours per mile for aluminum as compared with 50 man-hours to 60 man-hours per mile for steel. This could bring savings of as much as $80 to $100 per mile, for example, in laying a water or gas line to a rig, and the same savings in picking it up.

As much as 3 mi. of aluminum line pipe can be hauled on one truck load, saving as many as two trips in changing locations. Reynolds quotes one drilling contractor as saying this meant a $400 to $500 over-all saving on each move.

One man can lift as many as four joints of aluminum pipe at a time (picture, page 13), whereas it would require at least two men to handle one joint of steel pipe. In exceedingly tough terrain—the Louisiana marshes, for instance—this can be a decided advantage.

A drilling contractor told PETROLEUM WEEK that he had bid for one Louisiana drilling job on the basis of using butane for fuel. Subsequently, he learned that natural gas was available from a source about 6 mi. away. Using the natural gas for fuel could mean a considerable saving, but the line had to traverse swamp and brush. This contractor used 2½-in. aluminum line pipe, with five men laying 10,000 ft. in 3 hours. He said it would have taken the same men 8 hours to lay 5,000 ft. of steel pipe.

Initial cost. Equipped with the most economical coupler, aluminum pipe costs about the same as steel in the 2-in. and 2½-in. sizes. In the 3-in. size, aluminum is about 10% cheaper than steel, and in the 4-in. category, it is about 25% cheaper.

(Three different types of couplers are available now: Victaulic Snap-Joint; Industrial Petromatic; and Race & Race Industrial. There have been many improvements in the past three years, and several more are in the works.)

On 3-in. Schedule 5 line pipe, steel runs about $86 per 100 ft. For aluminum, the cost is about $78, including $14 for couplers. This price is based on a per-mile purchase basis.

Flow capacity. The wall of aluminum pipe is much thinner than that of comparable steel pipe. The resulting larger inside area averages about 8.5% for the 2-in. through 4-in. pipe sizes.

Therefore, a larger amount of liquid or gas can flow through aluminum pipe as compared with steel pipe of the same outside diameter.

The smooth, extruded walls of aluminum pipe reduce the friction drop by 20% to 30%, again increasing flow capability.

These increases in flow capacity mean that, in some cases, a smaller size aluminum pipe can do the job, increasing savings even more over comparable steel pipe.

Installation. In addition to the speed and ease factors, aluminum pipe is flexible enough to be contoured over rough ground and around obstacles without tool-bending. A 90-degree

STEPPED-UP SALES drives by aluminum producers aim at expanding oil market. Here a Reynolds Metals Co. agent tells suppliers how aluminum's oil uses can be expanded.

change in direction can be made with about 120 ft. of aluminum pipe.

Aluminum also is gaining stature in the oil fields for some permanent installations.

Many oil companies are using aluminum for vent lines on tank batteries. Some majors are considering aluminum as standard material for such uses.

There are some all-aluminum storage tanks in use, the largest having a diameter of 128 ft. and a capacity of 2⅓-million gal. of 83% ammonium nitrate solution. Some aluminum tank roofs for sour crude oils have been in use for more than 25 years, in locations where steel roofs failed in less than five years. Installation costs are higher, but maintenance is nil.

Aluminum grating for floors and walkways, aluminum platforms and ladders, and offshore gathering lines are other field uses.

Experimentation and development of aluminum sucker rods continues.

About five years ago, a major oil company was trying to whip corrosion of sucker rods (used to lift oil up the well bore). Hydrogen sulfide was attacking the steel so actively that the rods had to be replaced about every two months.

Reynolds supplied experimental aluminum rods. However, this first field experiment—on two West Texas wells—failed. The rods wore out too quickly rubbing against the casing.

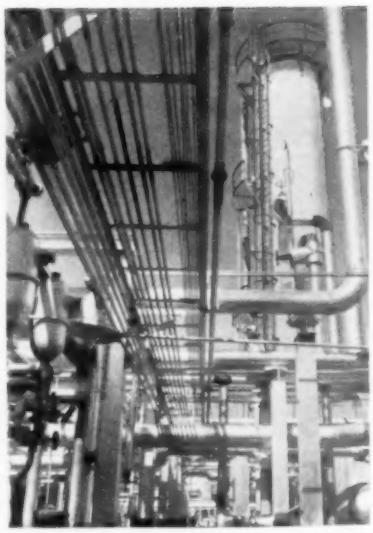
About a year ago, Reynolds developed a new type of anodized aluminum rod to counter the abrasive action. Reynolds believes this coating solved the abrasion problem. However, the rods lasted only two months.

The second failure was caused by the couplings between rod joints. This problem now is being tackled by an outside research institute. Alcoa also is working on an aluminum sucker rod, but isn't ready yet to bring it out.

An aluminum drilling rig, built on an experimental basis, has proved so successful mass production plans are being pushed.

The rig (cover picture) was built by Franks Manufacturing Co. Division, Cabot Shops, Inc., of Tulsa, in cooperation with Reynolds. The telescoping rig was put into service about two years ago. It is owned and operated by Ray's Well Service, of Mayesville, Okla.

Two additional rigs, ordered by a major oil company, will come out of the Cabot shops within the next 60 days. Reynolds engineers have been cooperating with Cabot to include new engineering refinements in these rigs.



INSTRUMENT TUBING, tower jackets, at processing unit are all aluminum.

The new rigs will be smaller, and will be used strictly for servicing wells from 5,000 ft. to 6,000 ft. They will have 65-ft. masts, and capacity will be 100,000 lb., compared with the experimental rig's 100-ft. derrick and 200,000-lb. capacity. The initial unit was designed for drilling to 5,000 ft. with 3½-in. steel drill pipe, or for well servicing to 15,000 ft.

A Franks Co. spokesman estimates savings in weight of an aluminum rig over a comparable steel rig is "around 35%."

The new rigs will use more aluminum than the experimental unit, which, the spokesman says, "has more than fulfilled its expectations." But, as in the original rig, use of aluminum in the new rigs will be confined primarily to structural members, such as mast, supports, substructures, and the like.

A successful method of plastic-coating line pipe would solve a major oil field problem, open vast new sales avenues.

One of aluminum pipe's weaknesses is its vulnerability to oil well brines. Well brines generally contain iron sulfide and other heavy metal salts that cause accelerated corrosion, thus precluding permanent use of aluminum pipe. For that reason, a large potential market remains virtually untapped. Aluminum pipe can be used for such purposes, however, on a temporary basis.

On the other hand, aluminum pipe holds up very well in sea water. Service life of more than ten years has been reported. Aluminum pipelines have been functioning well in offshore crude oil and gas lines. Most offshore lines are installed bare.

II. Processing

More than 10-million lb. of aluminum products went into petroleum and chemical processing plants last year But this is only a small fraction of the volume the aluminum companies are shooting for.

Reynolds believes that processing-plant use of aluminum will really come into its own within the next year and a half. When it does, Reynolds thinks this volume will exceed oil field consumption.

Jacketing on insulated vessels and piping is currently a heavy use for aluminum by processing plants.

Cost of installation is competitive, and maintenance is cheaper. Use of aluminum makes dry wall construction possible. If asphalt is used, the surface must be cemented, and possibly painted. Average life of other jackets is about five years; for aluminum, it's ten years.

Aluminum sheet or foil jackets that are used to weatherproof thermal insulation may, in special designs, also serve as vapor barriers.

Aluminum can be readily fabricated by conventional methods into heat exchangers, kettles, stills, driers, towers, and other process vessels.

Excellent heat conductivity makes it especially useful in vessels where heat must be applied to the product.

All refined petroleum products—gasoline, kerosine, fuel oil, naphthas, and the like, may be handled satisfactorily in aluminum. Even waste gases from refining, such as carbon dioxide, sulfur dioxide, and hydrogen sulfide, may be handled safely.

Aluminum pipe used to carry liquids and gases in processing plants resist attack by the materials carried as well as by the corrosive atmosphere often found around such plants. Tests prove that aluminum is as inert as glass to refined products.

The lightness, and ease of installation, that make aluminum desirable in oil field uses also have their importance in the processing field.

Aluminum heat exchanger tubes are being used in the production of gasoline from natural gas, and in other processing units. Other uses include aluminum instrument tubing, and for demisters and bubble caps in fractionating columns.

Aluminum pipe's low friction factor, nonsparking qualities, and durability are other advantages with particular appeal to refiners.

Some examples of current installations of aluminum include:

• More than a mile of aluminum pipe is being used by one large Houston refinery as part of an expansion move.

• A major oil company is using 15,000 lb. of 4-in. aluminum pipe in a gasoline plant in Louisiana.

III. Pipelining

Some of the aluminum companies are mapping a strong sales drive to capture more of the pipeline market, particularly for relatively short gathering lines.

Reynolds has been installing aluminum pipelines since 1949. About three years ago, it put in a 10-mi. stretch of 8⅝-in. pipe from Plymouth Oil Co.'s East White Point field, near Corpus Christi, Tex., to the company's La Quinta alumina plant, to carry up to 20-million cu. ft. per day of natural gas.

In line with customary Texas Gulf Coast practice, Reynolds wrapped and coated the pipe with standard bitumastic coating and fiberglass as a hedge against corrosion. But a short test loop of uncoated pipe was installed at the same time.

Regular inspection since, the company reports, shows no corrosion of the uncoated loop. But Reynolds still recommends orthodox coating and wrapping in such areas, because of soil conditions.

Alcoa currently is installing an 8-in. aluminum gas-transmission pipe at Port Lavaca, Tex. Total length of the line is about 24,000 ft. It will handle gas at 500 psi. presure. The pipe will be given no external protection, except that certain sections will be protected experimentally with aluminum anodes. Certain joints will be flanged, including those between steel and aluminum, which will be insulated.

A Reynolds official told PETROLEUM WEEK: "We feel that the major part of testing is over in the pipeline field. We are now designing a sales program for the pipeline industry which will be ready by the first of the year."

Light weight, again, is aluminum's trump card. Pipelining is made correspondingly easier and less costly. In addition, aluminum pipe welding is simple and fast. A light machine, using an inert-gas shielded-metallic-arc process, and aluminum-alloy welding wire, were used to weld the joints. The welding team averaged about 4,000 ft. per 8-hour day.

Aluminum makers haven't set sights yet on the interstate pipeline market because of the larger pipe sizes needed.

Reynolds produces only up to 10-in. diameter, but probably will increase this to 16-in. within the next four years.

On the other hand, aluminum seems ideal for offshore lines.

Aluminum's proved ability to resist sea water makes it an excellent product for offshore lines.

Aluminum, as experience in Lake Maracaibo has shown, also resists attacks by the Teredo, a small aquatic animal that damages protective coating applied to steel pipe, thus exposing it to corrosive action. A 700-ft. length of Alcoa aluminum pipe laid in Lake Maracaibo late last year has successfully carried crude oil without any noticeable corrosion, or wear from the Teredo, though the pipe was uncoated.

IV. Disadvantages

Some aluminum characteristics are particular drawbacks in the oil fields. For example, it expands about twice as much as steel.

Aluminum's greater elasticity causes it to "crawl" under temperature changes, creating the possibility of strains, especially at the couplings.

Aluminum pipe demands more careful handling. Otherwise the pipe may shear at the coupling point, or sustain other damage.

While aluminum is compatible with most materials found around a drilling location, including water, sour or sweet gas, air, petroleum fractions, and crude oils, it definitely isn't suitable for carrying well brine and highly caustic solutions; at least, not on a permanent basis.

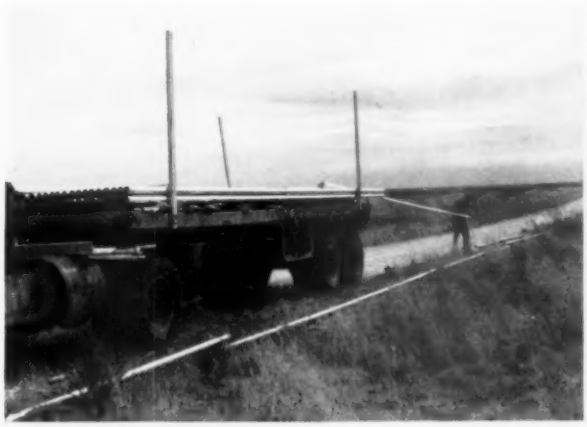
Aluminum pipe also doesn't have the tensile strength of steel. And, because a thinner-walled pipe is used, aluminum pipe must be protected under certain circumstances. On road crossings where traffic is heavy, for instance, it may be necessary to lay the aluminum pipe through a length of steel pipe.

In suspension of more than 20 ft. of pipe, aluminum must be braced to prevent swaying or excessive stress at the coupling.

Because of its biggest advantage —light weight—aluminum pipe is more subject to movement from "water hammer," or surging flow.

While the movement doesn't damage the pipe, unless it scrapes against a sharp surface, constant vibration or movement can weaken the connection points. To overcome this possibility, 10 ft. to 12 ft. of rubber hose can be connected between the pipe and the pump.

The effect also can be reduced by installing surge chambers—short pieces of upright pipe—every mile or so in the line. Reynolds is working on this problem now.



ALUMINUM LINE PIPE can be handled by smaller crews, saving up to 90% in time spent laying and picking up pipe. New tools, and light weight of pipe (one-seventh as much as steel), speeds coupling, uncoupling, jobs.

What's New / IN THE INDUSTRY

Communications 'Czar' For Oil in Wartime?

The National Petroleum Council has recommended the appointment of an official to coordinate the industry's communications during a national emergency.

It would be his job to prevent a shutdown of, or interference with, essential petroleum radio and wire facilities. In the event of an emergency, he would "interate" the government's needs with the industry's private facilities.

The NPC recommendation was based on a report made by its Subcommittee of Oil & Gas Communications Facilities. The study has been requested by the Interior Dept.'s Office of Oil & Gas, which wanted to know the "feasibility and desirability" of organizing the industry's facilities into a nationwide communications network.

The subcommittee report favored cooperation with the government, but declared that the system should be "permitted to continue under industry control for maximum contribution to victory."

The petroleum industry currently owns 30,000 miles of pole lines and 225,000 miles of circuit lines, including 55,000 miles of leased lines.

•

Auto Registrations Up

Motor vehicle registrations will be 4% higher by the end of this year than they were at the close of 1955, the U.S. Bureau of Public Roads predicts.

Registrations will total 65.3-million, including 54.3-million passenger cars (up 4.1%), says the bureau. Truck and bus registration will increase 3.7%, to total 11-million.

By 1965, registration of all vehicles is expected to reach 81-million.

•

The proposed merger of Panhandle Oil Corp. with American Petrofina, Inc., has been approved by Panhandle stockholders.

Under the plan, each share of Panhandle common stock will be converted into 1.3 shares of American Petrofina Class A common stock.

Through the merger, American Petrofina acquires all the oil properties and other assets of Panhandle.

Petrofina, a Belgian oil firm, is seeking to establish an integrated operation in the U.S. (PW—Jul.22'56,p26).

•

Domestic producers want the Office of Defense Mobilization to go ahead with imports hearings in October—despite the Suez dispute.

Defense Mobilizer Arthur S. Flemming reportedly is considering postponement of the hearings because of problems created by the Middle East crisis. ODM feels that disruption of Suez traffic will boost demand for Western Hemisphere oil, thus solving the imports problem (PW—Sep.28'56, p9).

The Texas Independent Producers & Royalty Owners Assn. sees things in a different light. It feels the Suez crisis merely emphasizes the need for defining U.S. imports policy.

"Far from altering the need for proceedings under the national security amendment, the Suez crisis underscores that need," said A. E. Herrmann, TIPRO president, in a letter to Flemming.

•

Speculation that the government may remove virtually all restrictions on imports of residual fuel oil is growing. Complaints by the domestic coal industry over inadequate railroad transportation seemingly added more fuel to the fire last week.

Coal's transportation problems come to light in a report from a National Coal Assn. study group on hopper-car supply. The report said that the daily shortage of hopper cars amounted to almost 4,000 for the week ended Sept. 1. And the pinch is hampering the flow of coal to supply energy demands of the U.S. and friendly nations.

•

An estimated 863,800 persons were in the U.S. oil and natural gas industries as of July 1, 1955, excluding employees of retail outlets and retail services. This is a finding of the National Petroleum Council.

NPC indicated that seven out of every hundred employees are scientists or engineers. Total technical personnel was 33,091. The total of employees by segments follows: crude petroleum and natural gas exploration and production, 313,500; refining, 209,400; transportation, 113,000; and distribution, 227,900. It was also estimated that 10% of the total number of employees were women.

•

Shell Companies Foundation, Inc., is expanding its program to encourage and aid outstanding high school teachers of physics, chemistry, and mathematics—with an eye to attracting more students to scientific careers (PW—Mar.16'56,p22).

The foundation provided fellowships for 60 high school teachers to attend seminars at Stanford and Cornell universities last summer.

"The first year's program was so successful that we plan to provide a significantly greater number of fellowships for 1957," says M. E. Spaght, president of the foundation.

•

A multimillion-dollar Dresser Industries center is under construction in Houston. Initially, seven buildings will be built on the 132-acre tract, including locations for two of Dresser's major subsidiaries: Southwestern Industrial Electronics Co. and Lane Wells Co.

Included in the first buildings will be an office for SIE, an engineering and development building for Lane Wells, a shipping and receiving warehouse, a Lane-Wells manufacturing building, a vehicle repair shop, and an SIE assembly building.

•

The Oil, Chemical & Atomic Workers' Union continues to strengthen its position in the Pacific Northwest. The union has won collective-bargaining rights at the Edmonds (Wash.) bulk plant and asphalt refinery of Union Oil Co., by a vote of 21 to 12. OCAW already represents employees at the Anacortes and Ferndale (Wash.) refineries of Shell and General Petroleum, respectively.

•

Maston Nixon, chairman of the General Gas Committee, will be back before the Senate Lobbying Investigating Committee Oct. 8-10. He will be asked for further testimony on GGC's activities in connection with the natural gas bill.

Other witnesses called for Oct. 8-10 will include legal experts and political scientists who have taught and written on the subject of lobbying.

Problem: Lengthen time between turnarounds...

Raise production...

Solution: Ljungstrom® Air Preheater

With a Ljungstrom stills stay on stream at top capacity months longer, because preheated air mixes more thoroughly with fuel. More complete combustion greatly reduces slag forming material. You generate higher flame temperatures, increase heat-transfer rates.

That's why four of your present processing units can do the work of five. With Ljungstrom Air Preheaters each unit's output can increase as much as 25%. Example: One pipe still in an eastern refinery went from 12,000 barrels to 18/20,000 barrels after application of a Ljungstrom.

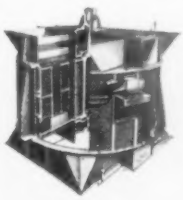
How fast is "WRITE OFF"?

Ljungstrom has many other advantages. You save up to 20% in fuel... furnace design is more economical, with no need for convection surfaces... many fuels you used to throw away can be used... through-put is consistently improved... product quality is higher. You can see, therefore, why a Ljungstrom is paid out in nine months or less.

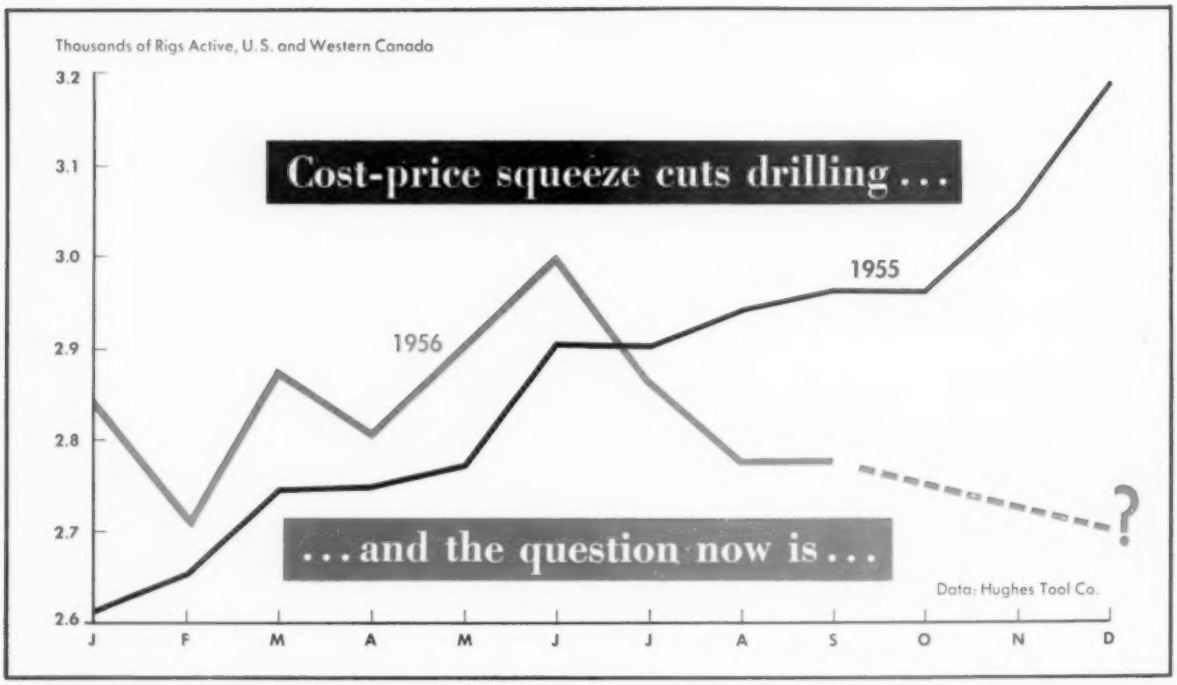
For more complete details on what the Ljungstrom Air Preheater can do for you – for an analysis of the heat recovery benefits attainable in fuel burning equipment – call or write The Air Preheater Corporation.

Wherever You Burn Fuel, You Need Ljungstrom

The Ljungstrom operates on the continuous regenerative counterflow principle. The heat transfer surfaces in the rotor act as heat accumulators. As the rotor revolves, the heat is transferred from the waste gases to the incoming cold air.



The Air Preheater Corporation 60 East 42nd Street, New York 17, N. Y.



Will Activity Continue to Decline?

Rigid prices in the face of increasing costs are forcing some drilling contractors to be reluctant in bidding on new jobs.

This is particularly true of the older and more established contractors, who have been able to get into the producing end of the oil business.

This was learned this week by PETROLEUM WEEK in a survey of the drilling industry in advance of the 16th annual meeting of the American Assn. of Oilwell Drilling Contractors in Ft. Worth, Oct. 7-9.

The recent steel strike added to the industry's woes. It idled rigs, and has caused some contractors to question the feasibility of returning them to work in the face of higher material costs resulting from the strike—unless prices can be increased.

Among the doubters are some of the older, but not necessarily the biggest contractors.

They refuse to bid for jobs below figures that they consider rock bottom profit-making prices in any given area, even if failure to do so means they must stack rigs.

This group feels that the only hope for contractors to remain solvent is to build up an interest in oil production.

The most desirable way to accomplish this is by taking a farmout or through a drilling deal for a little cash and a ⅓ or ¼ interest in the well.

Such deals are as attractive to some independent operators as they are to the contractors. They enable the operators to get a well punched down without too much outlay of cash.

While such transactions offer a salvation for some, there are other contractors who are not in the producing end of the business, and who bluntly say they do not intend returning rigs to work "unless we can get a decent footage rate, and can turn a profit on them."

The number of rigs that fall in this category is not known, but the average number operating in the U.S. and Canada during September, according to Hughes Tool Co., was 2,775 (chart). This compares with 2,966 a year ago, and with the high for 1956 of 3,062, which was reached in June, immediately before the strike.

Not all of the contractors can carry on without keeping their rigs busy. There are payments to be made on equipment, and payrolls to meet.

That is where the rub comes in. It forces many contractors to make narrow margin bids on jobs just to pay the "grocery bill." And it led one contractor in the Southwest to remark recently that they're "living off of depreciation. A lot of these boys are going broke on low bids, but they don't know it."

I. Costs Keep Rising

Much of the dilemma in the drilling business is coming from rising costs.

This is an age-old problem, but the steel strike and its resultant price increases have made it worse.

Not only did material costs go up, but the steel tonnage lost during the strike cut into supplies and idled rigs.

But higher steel prices aren't the entire problem.

Recent cost increases, including steel, labor, and all other factors, are estimated by the industry to be between 10% and 15%.

E. Dale Mount, of Dallas, AAODC president, does not think the rise in costs following the steel price increase has stopped. He feels that costs will continue to rise for a while on the equipment and services the contractor buys.

Aside from this type of price boost facing the contractor, he cites the cost of moving rigs as one of the most important.

"Except in a very, very few areas, drilling is so scattered—even in a

relatively active area—that the contractor has to move a long way between locations. There is a dearth of skid jobs, and it costs so much to tear down and rig up. West Texas is particularly bad."

Mount says the cost of moving a rig capable of drilling to 10,000 ft. or deeper runs about $10,000 for a 50-mi. move.

They're faced with the same problem out in the Rocky Mountain oil country.

The Paradox Basin of Utah, New Mexico, Colorado, and Arizona is booming, along with the San Juan Basin of northwestern New Mexico. These drilling plays are inviting to the contractor, but again the cost of moving is a deterrent.

One Denver contractor says, "We were invited to move a rig into the San Juan, but it would have cost $70,000 to move, convert to gas drilling, and get on location for the first hole."

Labor costs are fretting the contractors as much as anything else.

"One of our big costs–and big problems—is labor," comments Marvin Smith, of Odessa, Tex., a partner in Capitan Drilling Co. and in Highland Drilling Co.

"Despite these costs, we feel that workmen are not being paid enough. For example, a driller doesn't make as much as a plumber; yet he is in charge of several men, handles about $200,000 worth of equipment, and must make important decisions."

Highland and Capitan, two separate companies, have come up with a plan to eliminate turnover in labor. It is a profit-sharing plan for the employes, which enables the latter to collect a share of the company profits, based on salary and length of service.

Out in California, John S. Hagestead, whose company, Hagestead Drilling Co., operates four rigs, says labor is the big item, going up about 4% to 6% every year.

II. Can Costs Be Offset?

The consensus generally among the drilling contractors is that the industry will not be able to pass on the higher costs. But, there are a few who feel that this can and will be done.

Mount feels some progress was being made in lifting footage prices before the steel strike. But then the idling of rigs resulted in keener competition among the contractors.

This opinion also is held in West Texas, where one contractor says, "Footage prices are continuing to go down as bidding for jobs gets more fierce."

This also holds true in the Rockies and California, from which such comments as these came:

"We can't get any relief."

"We have not been able to raise prices because the business is too competitive."

The more optimistic contractors feel that the individual companies, also caught in the price squeeze, understand their problem and will help work it out.

The president of a drilling firm well-grounded in the economics of the contractor's problems, says:

"I've talked to a lot of producers, and I've come to this conclusion—it's the contractor's fault that the footage price has softened. If the contractor would ask a decent price, the producer would give him a decent price. The producer knows what it costs to drill wells, and he's willing to let the contractor make a reasonable profit. But when a contractor has some rigs stacked for a while, he begins to get frantic. Then he starts bidding too low for either his or other contractors' good."

Some of the companies operating in the Rockies support this position. They feel the contractors are right in asking for a fair price, and do not award contracts, particularly on the

PESA members spurred by free enterprise supply the oil industry with

- modernized tools, methods and services for—TODAY
- research and development to ready new tools, methods and services for—TOMORROW

PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION

The Mid-Continent petroleum industry grows bigger every year . . . and Lone Star's close-at-hand inventories of API casing, tubing and line pipe are helping busy oil men get the job done . . . faster and more economically.

Joe Roughneck, whether he's on a rig or running a major company, knows his straight-shootin' friends at Lone Star . . . knows Lone Star's superior API pipe . . . and likes the convenience of Lone Star's quick delivery and prompt service.

Neighbor, wherever you are . . . specify Lone Star and we both get a good deal!

Lone Star STEEL COMPANY

LSS

EXECUTIVE-SALES OFFICES
W. Mockingbird Lane at Roper • P. O. Box 12226 • Dallas, Texas

DISTRICT SALES OFFICES
Houston, Texas | Midland, Texas | San Antonio, Texas
Tulsa, Oklahoma | Wichita Falls, Texas | Shreveport, La.

lower bids, without getting a credit check on the contractor.

The vice-president of a large contracting firm with offices in Ft. Worth and Midland reports:

"I've noticed one trend that's particularly encouraging. More oil companies are checking the drilling contractors to see that they have adequate equipment before ever submitting them a bid sheet."

W. N. Blanton, of Blanton Drilling Co., Houston, anticipates that, by the end of October or early November, increases will come in footage prices to take care of wage boosts and the round of cost hikes set off by the steel price hike.

III. Efficiency Is Answer

One means by which the contractor in the past has been able to absorb increased costs has been greater penetration through greater efficiency.

Just how much further the industry can go in this direction remains to be seen. There are some who feel the peak has not yet been reached. Others contend that it has.

One fact is known: The rate of penetration has remained static during the past three years. AAODC statistics place it at 188% of the average for 1941.

AAODC President Mount believes that "the contractor has about reached the peak of efficiency with the tools and techniques he now has. He will continue to drill faster—there is some room for improvement, but it's not much.

"Now, if there are improvements in supplies, equipment, and tools, such as muds, drilling bits, a turbine drill, or something, the contractor will be able to improve his efficiency by that much. But, unless there are some new developments like that, I think the successful contractor has about reached his peak in efficiency."

A Dallas contractor also feels that the peak of efficiency on conventional drilling equipment has just about been reached, but that more efficient work is yet to be done with the use of improved drilling fluids and a turbodrill or a percussion tool of some description. He says that one thing that has helped the contractor is better design of rigs in the transportation field.

Art Heiser, of Green & Heiser Drilling Co., which operates in California, feels this way:

"I can't think of any way we could do it faster unless someone comes out with an atomic bit. Even if they did, though, we wouldn't reap the results of it. We'd have to cut our prices on account of the faster time."

DOZENS OF TRUCKS, water tanks, and other mobile equipment were required at the petroleum industry's . . .

Biggest Fracturing Job

THE TWO MONTHS which have passed since the greatest fracturing job in the history of the oil industry afford an opportunity to evaluate its results.

The well that received the record-breaking treatment now is making an average of 40 b/d of oil and 25 bbl. of water. The water is a portion of that put into the well.

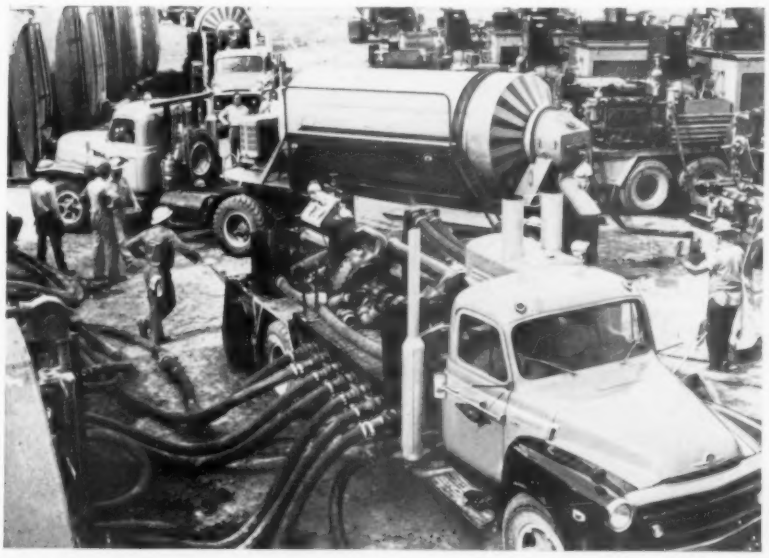
Prior to treatment the well was making 17 b/d of oil and no water.

"It was strictly an experiment," says an official of The Hanley Co., whose No. 2-A Driver, in the Spraberry Trend, 25 mi. southeast of Midland, received the treatment. "We had no idea what the results would be."

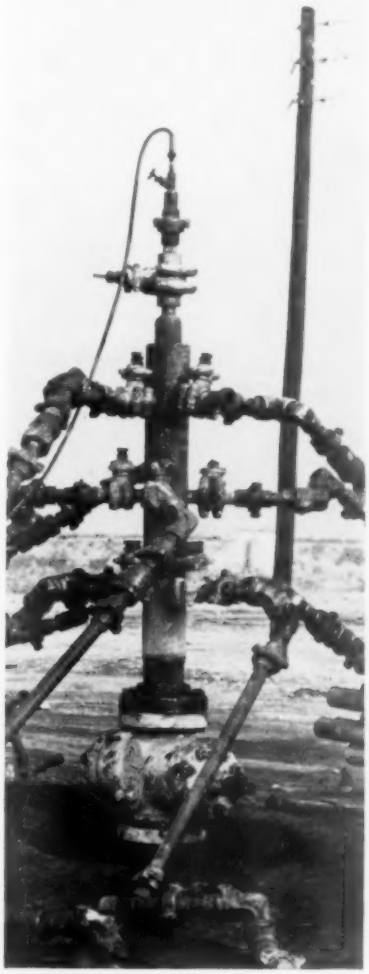
It was on July 24 that the biggest of all fracture jobs was accomplished by Dowell Inc.

It represented the most ambitious project ever undertaken to open up the vertically-fractured Spraberry formation, in an effort to encourage a better flow of oil.

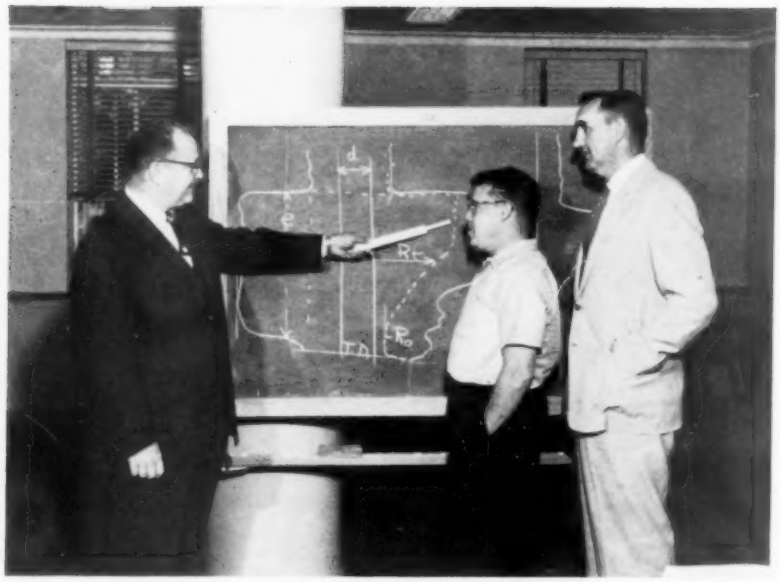
Dowell used a system known as "Riverfrac," in which 250,000 gal. of water and 200,000 lb. of sand were pumped into the well under high pressure in 96 minutes.



BLENDING of water and sand was done at the truck in the foreground. Center is sand truck, with water tanks at left, and the pumping units at right.



NETWORK of pipes hooked onto wellhead fed water and sand into the hole.



DR. S. J. PIRSON, instructor (pointing), discusses problem in oil well log interpretation with students W. O. Crego and R. F. Penner petroleum engineers, as . . .

More Log Schools Are Planned

Two-week classes offering intensive instruction on new techniques in well log interpretation will be held over the next several months in major oil centers throughout the country.

The special courses will be patterned after the initial class conducted last July 23-Aug. 3 in Denver. The instructors, Dr. S. J. Pirson, of the University of Texas, and Jack Grynberg, consulting petroleum engineer from Denver, have just concluded another short course in Colorado City.

Success of this school has encouraged Dr. Pirson and Grynberg to plan similar sessions in Dallas, Houston, Tulsa, Los Angeles, New Orleans, and other oil centers.

The 13 students who attended the latest log interpretation class are experienced petroleum engineers and geologists from throughout the U. S. and Canada.

They attended classes for two weeks to learn the latest techniques in interpretation of electric and radioactivity logs and dipmeter computations.

Grynberg says the school offers the only intensive and extensive instruction available to the public, limited as this "public" may be.

"In reservoir engineering work," Dr. Pirson says, "the logs are used to determine effective pay thickness, percent of porosity, permeability of the formation, fluid content, and expected well productivity and recovery."

He adds that the logs can be used to determine if a well has passed through an oil and gas bearing formation capable of producing in commercial quantities.

The logs also are used, he says, for correlation between wells, and for location of geological structures believed to contain oil and gas.

Another use of logs is to analyze water in a well. Through fluid resistivity computations, Dr. Pirson explains, an effort is made to differentiate between formation water recovered on a drillstem test and water that entered the formation from drilling mud.

Dr. Pirson and Grynberg say the technique of interpreting quantitative electric and radioactivity logs is effective in surveying old and new wells in the search for missed production zones.

Instruction in the special school includes theory, study with typical logs, discussion of actual problems in interpretation, and the geological and engineering significance of logs.

The oil finders have proved to be energetic in their studies and attentive in class (from 8 a.m. to 5 p.m.). The tuition—$250 per person—gives added incentive to study.

Dr. Pirson, a member of the petroleum engineering faculty of the University of Texas, is author of "Elements of Oil Reservoir Engineering," published in 1950 by McGraw-Hill Publishing Co.

What's New

Probe May Bring Changes In Federal Leasing Act

Changes in the Federal Minerals Leasing Act, to improve the definition of unitization and nonrenewable-option rules, may come out of a Senate subcommittee's investigation last week at Albuquerque, N. M.

Senator Clinton Anderson (D., N. M.), chairman of the subcommittee of the Senate Interior Committee, who conducted the investigation, and representatives of oil companies were agreed that changes are needed.

Anderson expressed the fear that unitization is being used to evade legal acreage restrictions. Oil company spokesmen say this fear and other differences of opinion arise from deficiencies in the law itself.

The subcommittee's investigation of leasing practices involving public lands by various oil companies came about as an indirect result of a suit Stanolind Oil & Gas Co. brought some time ago against former employees.

Stanolind alleged that these former employees used confidential information to secure valuable oil and gas leases in their own names. Stanolind dropped the case after the court in Albuquerque had refused a continuance.

At Tulsa, E. F. Bullard, president of Stanolind, commented that conflicting opinions as to compliance arise from deficiencies in the law itself, suggesting that this "seems to point up the need for thorough overhaul" of the law.

•

Greater Depths Due

Use of offshore drilling units in water depths ranging from 250 ft. to 600 ft. is anticipated.

R. J. Howe and B. G. Collipp, of Shell Oil Co., Houston, told last week's meeting of the American Society of Mechanical Engineers in Dallas, that it is a foregone conclusion that the average depth of water in which exploratory wells are being drilled will increase in future years, as will the maximum depth.

They placed the water depth record for the Gulf of Mexico at 100 ft., which is the same for Lake Maracaibo.

"With the advent of floating drilling platforms in California," they said, "it is difficult to say just what the

maximum water depth will be in the next few years. But a good guess would be on the order of 250 ft. for conventional mobile and fixed platforms, and 600 ft. for floating units."

They predicted a restricted use of the floating type of drilling platform in the Gulf of Mexico, because the average and maximum oceanographic conditions are more severe. At the same time, they feel it is almost certain these obstacles will be overcome.

•

Bigger Exports Growth

Continued increase in export sales of petroleum equipment is predicted by Arthur W. McKinney, president, National Supply Co., Pittsburgh.

He told last week's meeting of the New York Society of Security Analysts that, "whereas our domestic sales from 1950 to 1955 increased by 59%, our export sales in the same period increased by 118%.

He saw no drop in the ascending curve of exports, adding:

"Everything indicates that the most spectacular growth of the oil industry of the free world in the next ten years will be outside the United States. I believe that a number of sensational oil discoveries are still to be made in foreign countries."

•

A nationwide symposium on secondary recovery will be held Nov. 19-20, at Wichita Falls, Tex. Economic and engineering factors involved in the planning and installation of water-flood programs will be studied and evaluated. Attendance at the meeting, sponsored by the North Texas Section of the American Institute of Mining, Metallurgical & Petroleum Engineers, is expected to exceed 1,500.

•

A new method of well-head gas dehydration has been developed and put into production by Fish Engineering Corp.

A dehydration process is necessary to reduce the water content in gas to within the limits prescribed for safe pipeline transportation.

The new unit uses calcium chloride pellets in a tower of patented design. It requires no fuel in the dehydration process, nor any maintenance, aside from reloading the dessicant and changing charts.

Depending on the temperature of the gas flowing from the unitized separator, the chief operating and maintenance cost is that of replacing the calcium chloride, which is used at a rate directly proportionate to the amount of water vapor contained in the gas.

•

Montana's old Bannatyne field may be revived by secondary recovery if present studies by Sharples Oil Corp. turn out favorably.

The field was discovered in 1927 and abandoned in 1936, after production of about 55,000 bbl. of oil. Sharples has tentative plans for using either gas injection or water flooding, depending on results of core studies. Sand fracturing was tried on two wells in the field last year, but only small production resulted.

•

Increased interest by major oil companies in exploring Alberta's tar sands indicates that initial test results are promising, according to the Alberta Dept. of Mines & Minerals.

In fact, development of the tar sands is approaching reality, says Frank McMahon, president of Pacific Petroleum Co. and West Coast Transmission Co. He told a shareholders meeting of Canadian Collieries, Ltd., of which he is a director, that an engineering firm believes the tar sands can be treated to produce crude oil at prices competitive with oil wells.

The firm was Loomis & Co., which has carried out experiments on the vast underground sands.

The mines and minerals department noted that two companies taking prospecting permits on additional acreage have operated previously in northeastern Alberta. These companies are Royalite Oil Co. and Shell Oil Co. Each has taken out permits for an additional 50,000 acres. Richfield Oil Corp. has also taken out a new permit, for approximately 50,000 acres.

•

Sale of oil leases on 15,342 acres brought in $58,411 to the Colorado Land Board last week.

T. D. Christopher, independent operator from Denver, paid the biggest bonus—$14.50 per acre on a 160-acre tract in Jackson County.

•

Preliminary construction work has started on Richfield Oil Corp.'s drilling island off the California coast.

The island will consist of an outer ring of breakwater rock with a land-filled center. It will be built in 45 ft. of water. The island is located on Richfield's 1,175-acre state tidelands lease, offshore from Rincon.

Richfield plans to drill at least 70 wells from the island.

•

First efforts to extract commercial amounts of oil and gas from shale in Utah will be started by two California brothers.

Norman E. and Ernest L. Olsen, of Pasadena, have been granted a lease on 20,055 acres by the Utah land board. The tract is north of Watson, in the White River area.

•

Construction of a natural gasoline plant in the Roggen area of Colorado has passed the halfway mark.

The $850,000 plant, to be operated by New Drilling Co., will serve Denver-Julesburg Basin fields. It will have a daily capacity of 6-million cu. ft.

•

Oklahoma's minimum per-well allowable in October is 20 b/d, a drop from the 25 b/d which has been in effect.

The change in the per-well allowable dropped the total permissive flow for the state by about 42,000 b/d, to average 560,920 b/d.

•

Louisiana entered October with the same basic allowable as existed in September.

The allowable is 749,282 b/d, which includes an allowable of 5,083 b/d for new production. The October figures includes an adjustment in offshore production from 94,378 b/d to 108,651 b/d, and a cut of about 9,190 b/d in inland production.

•

Phillips Petroleum Co. is purchasing crude oil from producers in four states on the basis of 80% of August runs.

The firm previously had indicated

it intended to purchase only 75% of the August runs. Producers in Texas, Oklahoma, Kansas, and New Mexico are affected.

•

The average value of U.S. crude oil at the well dropped 1¢ a bbl. in 1955. A bureau of Mines report shows that the average value was $2.77 a bbl. in 1955, as against $2.78 in 1954.

The report also shows that the total value of crude at the well climbed to $6,870,690,000 in 1955 from $6,424,930,000 in 1954.

A supplementary table reveals that the number of producing oil wells in the U.S. has jumped to 524,010, with an average production of 13.2 b/d. Comparable data for a year earlier were 511,200 wells and 12.6 b/d.

•

The 2-millionth bbl. of waterflood oil has been produced from Cities Service Oil Co.'s Madison Block project in Greenwood County, East Kansas.

Secondary recovery engineers estimated there is still another 2-million bbl. of oil that can be recovered through waterflooding.

The Madison field was discovered by Cities Service in 1923, with production from the Bartlesville sand at 1,800-900 ft. The producing formation was subjected to gas repressuring. And waterflood operations were initiated in 1948.

There are 62 active oil wells in the waterflood project, and 47 injection wells.

The well that produced the 2-millionth bbl. of waterflood oil is the Cities Service 24-B. It is currently producing 210 b/d.

•

Drilling Highlights

Canada—Canso Oil Producers, Ltd., has made a new oil discovery in the west central sector of Saskatchewan. The well is the No. 1-25 Major, 15 mi. from nearest production in the Smiley-Dewar Viking field, and 16 mi. from the Buffalo Coulee Banff field. A drillstem test in the 2,730-60-ft. interval resulted in gas flow of 1.3-million cu. ft. per day with recovery of 60 ft. of gaseous, heavily mud-cut oil.

Louisiana—Continental Oil Co. has made a gas-distillate discovery in the Alligator Pass area, Plaquemines Parish. No. 1 Delacroix flowed 3,834,000 cu. ft. of gas daily and 252 b/d of 44.5-gravity distillate through 14/64-in. choke from the middle Miocene from perforations at 11,381-88 ft. and 11,418-79 ft.

New Mexico—Stanolind Oil & Gas Co.'s No. 1 Greenwood, wildcat in Eddy County, flowed gas and distillate on drillstem test in the Pennsylvanian. Testing from 10,792-850 ft., Stanolind recovered 330 ft. of free distillate and 20 ft. of fresh water. The discovery is in section 27-18s-31e, 1 mi. north of the shallow Shugart area.

Southwest Texas—Houston independent Michel T. Halbouty has completed his No. 1 Shook wildcat, 7 mi. southwest of Carrizzo Springs, Dimmit County. The well flowed at the rate of 95 b/d on a 12/64-in. choke from perforations at 2,922-26 ft. It is located 4 mi. west of nearest production, in the Wintergarden field.

Texas Gulf Coast—Marine Gathering Co. of Houston has completed No. 1 Eva Anderson, section 75, Coleman-Fulton Pasture Lands, in Frio sands, San Patricio County. The gas-distillate discovery was completed through perforations from 9,923-34-ft. for a daily open flow of 6-million cu. ft. of gas plus 60 bbl. of 59.4-gravity distillate per million.

West Texas—A new Ellenburger oil field has been opened up with completion of No. 1 V. V. Grady, in central Andrews County, by W. E. Bakke, of Midland. The strike flowed 1,022 bbl. of 43.2-gravity oil through a ½-in. choke from perforations at 12,312-53-ft. Bakke plans to complete the well dually from the Devonian. Location is in section 22, block A-44, psl survey.

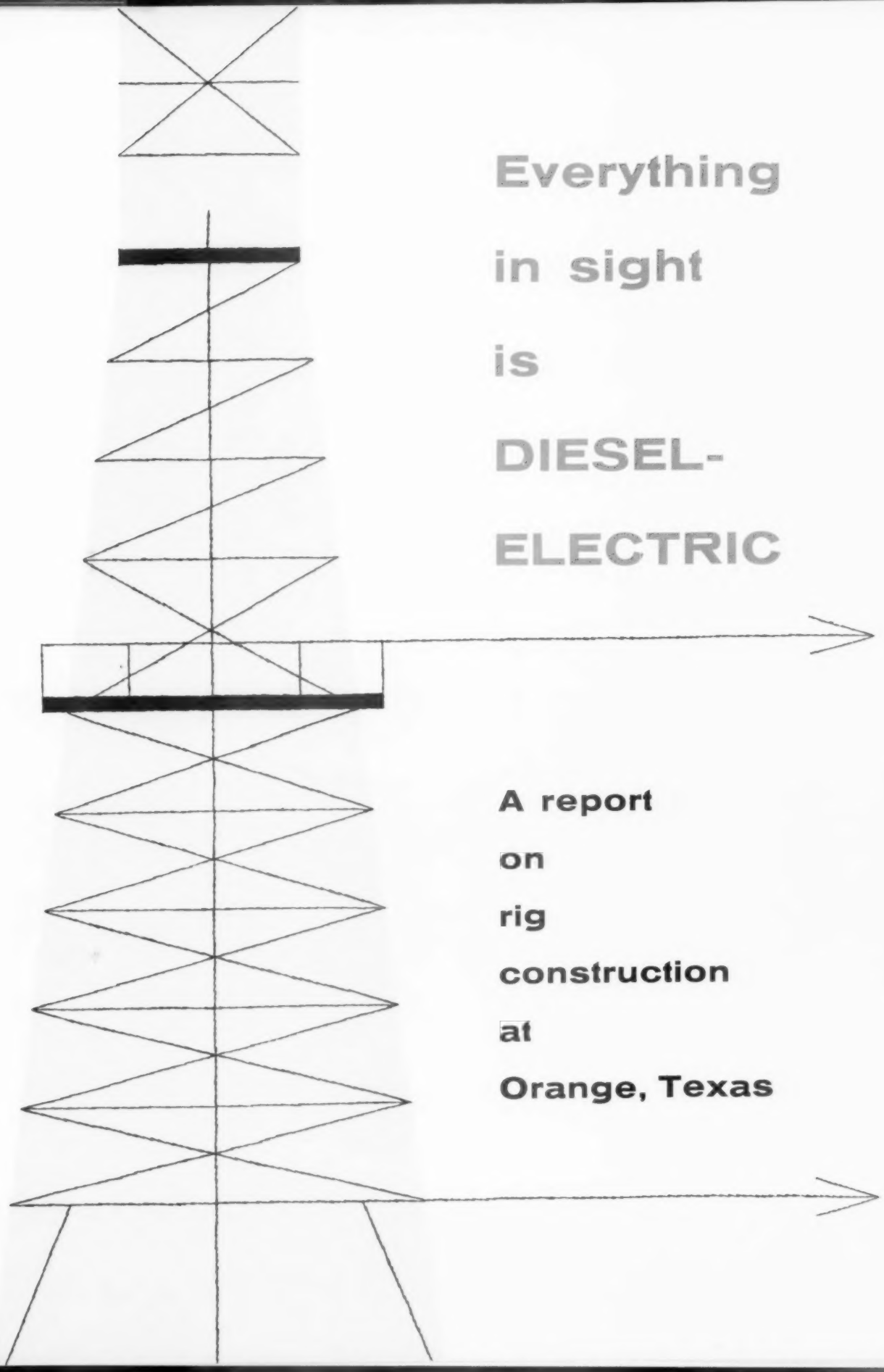
California—Richfield Oil Corp. has opened a new pool in the Wheeler Ridge area with No. 16-30 Richfield-Mohawk-Wheeler Ridge Community, section 30-11n-19w. Originally drilled to 9,797 ft., the wildcat was redrilled to 5,905 ft., where it swabbed at a rate of 161 b/d of 30.7-gravity oil, cutting 5%. Production is from the Pulv sand. Discovery well is located ½ mi. northeast of the Windgap pool.

Wyoming—Gulf Oil Corp. is preparing for a test to the Madison in the old Bison Basin field, Fremont County, with No. 1-C Government, section 18-27n-95w. Gulf has recently been engaged in further development of the old field in the Frontier zone.

Oklahoma—Lion Oil Co. has completed No. 1 Steele, section 13-24n-6w, Garfield County, as an oil discovery. The wildcat flowed 103 b/d of 38-gravity oil through 28/64-in. choke. Production is from the Skinner sand perforated from 5,426-32 ft.

Gas Conservation Project in Canada

British American Oil Co., Ltd., is nearing completion of its gas conservation plant in the Nevis-Stettler-Fenn area of central Alberta, Canada. When placed in operation this fall, the plant will have a processing capacity of 20-million cu. ft. of natural gas per day. The gas now is being flared from the Fenn and Stettler oil fields. Fractionation towers in the background rise above the main building. A 65-ft. excavation in the foreground will accommodate the water intake system.



Everything in sight is DIESEL-ELECTRIC

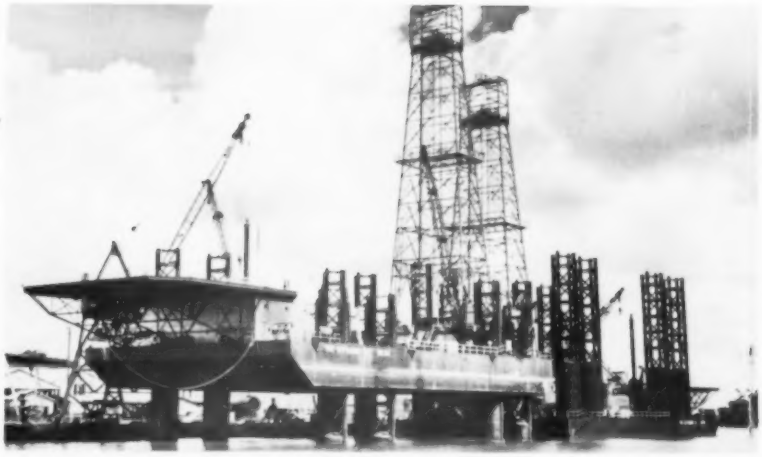
A report on rig construction at Orange, Texas

1

Shown here is Kerr-McGee's Rig No. 47, a mobile type of drilling device under construction by American Bridge Division of U. S. Steel. Three Electro-Motive Power units will be located on the rig, supplying power for mud pumps, drawworks and rotary table. Due for completion late this year, the drilling device brings to three the number of Electro-Motive Powered rigs for Kerr-McGee.

2

Rigs No. 54 and 55 for Offshore Company are shown here nearing completion in the American Bridge yards of U. S. Steel Corp. These mobile drilling barges, each powered by three 875 hp. Electro-Motive Power units, are capable of operating in waters up to 100 feet in depth. Each barge measures 200 feet long and 104 feet wide and contains eight hydraulically operated, 225-foot supporting legs.



3

This tender, one of four being converted for a major oil company, is shown at the Levingston yards at Orange. A former LST, the tender features a heliport and is completely outfitted with modern eating, sleeping and recreation facilities for the crew. Two 12-cylinder Electro-Motive Power units rated at 1200 hp. each will be located in the tenders to power large mud pumps.

4

The Penrod Drilling Company's W. H. (Bill) Dordan, a submersible island drilling barge, powered by 3 Electro-Motive units, is one of two recently christened. Built by the Levingston Shipbuilding yards, the Dordan is now drilling for Placid Oil Company near Houma, Louisiana. The second Electro-Motive powered barge, the Tom Sorrell, is also completed and drilling for Placid Oil Company in Lake Washington, La. Both of these barges are capable of drilling 18,000 feet in 19 feet of water.

Six Rigs – Four Companies – All Diesel-Electric

. . . and ALL ELECTRO-MOTIVE POWERED

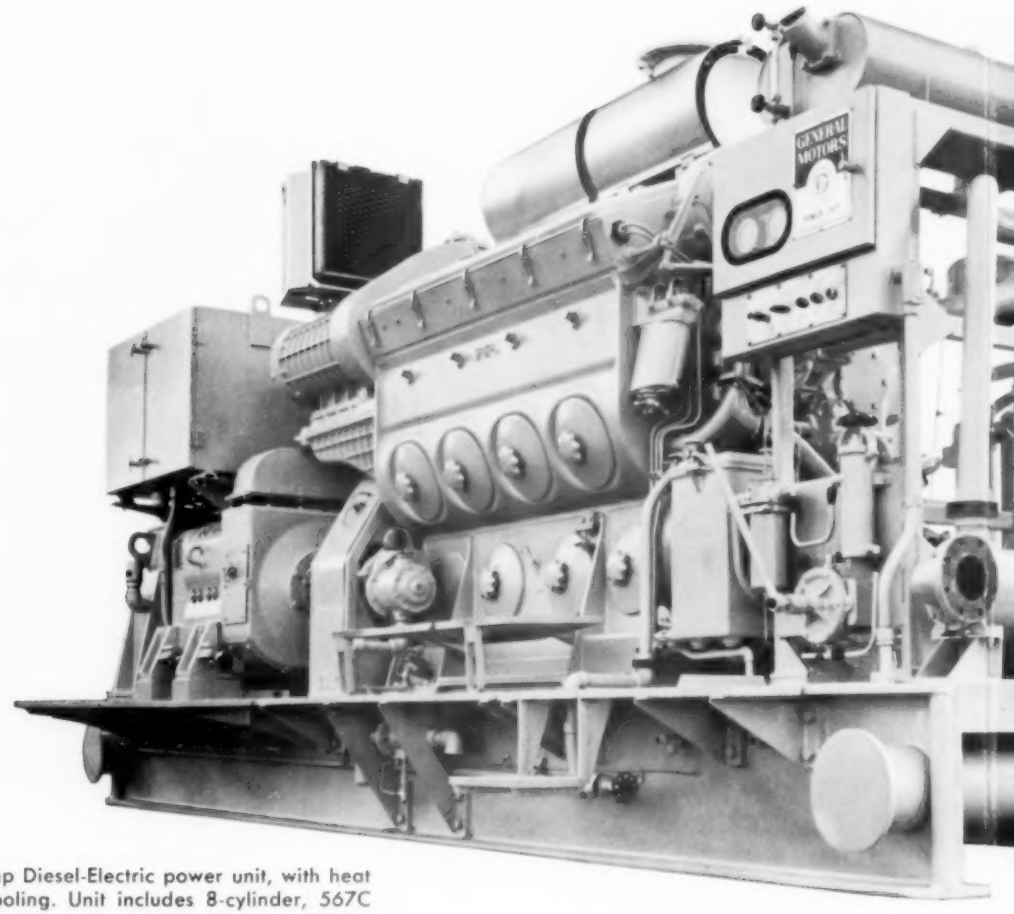
We had this aerial view of the yards at Orange, Texas, taken for just one reason. It tells more literally than words how Electro-Motive Power is being accepted in the drilling industry everywhere. In this one photograph, there are six offshore drilling platforms or tenders in various stages of construction for four different concerns. All have one major thing in common: *each is equipped with Electro-Motive Diesel-Electric Power.*

If your interests lie with deep-well drilling on land, or with offshore drilling, the next few pages will tell you why Electro-Motive Power is rapidly assuming the position of dominant leadership in such applications.

feet of water.

ELECTRO-MOTIVE

offers new standards of flexibili



SR8-W 900 hp Diesel-Electric power unit, with heat exchanger cooling. Unit includes 8-cylinder, 567C Diesel engine, all engine accessories, two 500-kw direct current generators, and generator control cabinet. All mounted on a steel sub-base, 21-feet long, 6-feet wide and 9-feet 7-inches high.

Completely Integrated Design

Each of the major components designed and built to work together—one manufacturer—one source of responsibility.

Maximum Portability

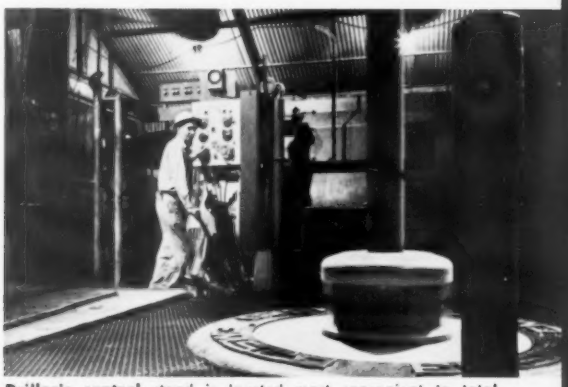
All components on skids with weight reduced to a minimum. Units are ruggedly built to withstand handling. No position problem—slashes setup and moving time on land rigs.

Unmatched Flexibility

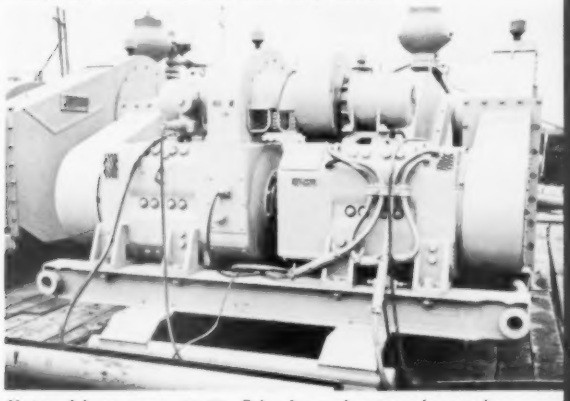
At a flick of the selector switch on the driller's control panel, power can be selected from one or more generators to meet any power requirement.

VE POWER

xibility, efficiency and economy



Driller's control stand is located most convenient to total operation. From a central position, the driller has complete control of all Diesel-electric equipment, including engine speed, mud pump, hoist, rotary table and safety shutdown.



Motor-driven components. Drive for mud pumps, drawworks is supplied by 625 hp. direct current electric motors. These motors provide smooth and rapid acceleration of loads with positive control of speed and torque. They also permit fast setup because each is connected to the main generator through simple, flexible power cables.

Proven components. This compact electrical control cabinet utilizes components that have proven themselves in thousands of General Motors Diesel-Electric locomotives. The tested dependability of this equipment is your assurance of lower cost per foot of hole drilled, and longer, trouble-free operation.

veight re-
edly built
oroblem—
land rigs.

h on the
e selected
meet any

Simplified Control

Centralized position of all controls for driller's convenience—continuously variable drawworks speed control and complete rotary table torque control at the driller's finger tips.

Low Drilling Costs

Lower first cost and lower cost per well drilled. Smooth electric power—flexible control —means less down time, faster drilling.

Complete National Service and Parts Availability

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS LA GRANGE, ILLINOIS

In Canada: General Motors Diesel Limited, London, Ontario

Petroleum Industry Sales Offices:

Tulsa, Oklahoma, 1008 Philtower Building, Phone: LUther 3-2471
Houston, Texas, 1222 Texas National Bank Building, Phone: FAirfax 3-3474
Dallas, Texas, 1710 Commerce Street, Phone: FOrest 8-2592
Morgan City, Louisiana, 1112 Offshore Oil Center Building, Phone: Morgan City 4411
Pasadena, California, 2050 Woodlyn Road, Phone: SYcamore 7-7955

SEAGOING PIPELINES, such as this Tapline pair (photographed before they were buried in sand at Sidon, Lebanon), permit tanker operations where no natural ports exist. Also, they keep tankers at working depth. These are among the reasons . . .

Why Offshore Terminals Are Growing

Taking terminals out to sea to meet tankers is an old trick in the oil trade. But it's getting more attention than ever these days.

A "sea berth" or offshore tanker terminal (one or more sea berths) appears to be nothing more than a bunch of buoys bobbing about beyond the breakers. The buoys don't mark a route to port, however. They are the port. A tanker ties up to them while loading or unloading crude or product (pictures, page 34).

At least one buoy, per berth, is the key to the operation. This one is hauled aboard ship. It brings up from the bottom a flexible hose that's then attached to one of the vessel's gate-valves. The other end is already connected underwater to a pipeline that runs to the shore storage facilities of a producer, refiner, marketer, or pipeliner.

Many new offshore terminals are either being built or planned right now.

Among them are: (1) a major fuel oil terminal near the eastern end of Long Island; and (2) a crude terminal in Delaware Bay, to serve the Philadelphia-Wilmington refining complex (PW—Sep.21'56,p35), which is still in the planning stage.

Offshore terminals have been part of the oil business for more than 30 years. Tidewater Oil Co.'s natural gasoline loading berth in the Pacific Ocean, 3,250 ft. from the shoreline just south of Ventura, Calif., for example, dates back to 1924. Others, off the coast of California and of South American countries, also date back to the late 20s and early 30s.

An oil-company survey taken two years ago turned up 61 such installations all over the world.

Today, more than 70 are estimated to be in operation. And others are on the way.

One factor influencing consideration of more sea berths is higher oil activity along coasts where natural port possibilities and facilities are scarce.

Traditional tanker terminals are located in bays, harbors, coves, or other sheltered bodies of water, where ship-handling facilities are not subject to the full influence of angry seas.

But where oil activity is at tanker volume, and lack of a natural port is a major obstacle to bringing in tankers, the offshore terminal can be the ideal answer.

Take Sidon, Lebanon, on the eastern edge of the Mediterranean. Here Trans-Arabian Pipe Line Co. meets more than 800 empty tankers per year with Saudi Arabian crude—saving the vessels a round-trip through the Suez Canal.

Sidon's success as a relay point for Saudi Arabian crude is attributable to the five sea berths by which Tapline has converted an "open roadstead" into a busy terminal.

The latest example of a sea berth solution to transportation problems in an expanding market is in Long Island, where residential centers are blooming farther and farther from New York Harbor.

Heating oil is the entrenched fuel for both home and industry. But it takes a long haul by truck, through some of the most congested roads in the East, to reach many of the fastest-booming outlets from New York. Some barging is done. But barging becomes less certain than trucking in winter—when fuel oil demand is high and constant.

To get high-volume, assured, economical winter delivery of fuel oil out on the island, an independent has just put two pipelines into Long Island Sound.

The two 24-in. lines, feeding into two 268,000-bbl. storage tanks, are

Experience can keep you out of trouble in fighting corrosion, too.

Why gamble with "unknown quantities" when it comes to protecting pipe, pipe joints, couplings and other vulnerable surfaces above and below ground?

Since 1941, TAPECOAT, the quality coal tar coating in handy tape form, has demonstrated its ability to withstand corrosion year after year. In case after case, TAPECOATed lines have been dug up after 10 years of service *with no signs of deterioration on the pipe surfaces uncovered.* That's why TAPECOAT is specified by those who know that continuing protection is the first consideration.

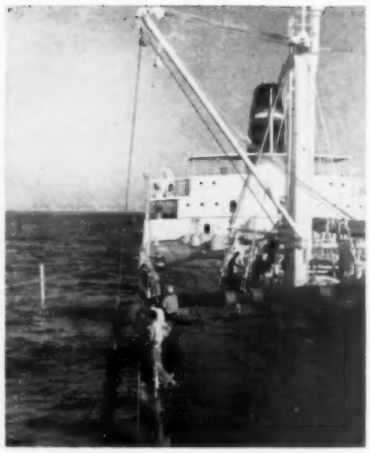
Everything considered, you'll be money ahead by using TAPECOAT to give you the quality protection you need for reduced maintenance and replacement cost.

Write for brochure and prices.

The TAPECOAT® *Company*

Originators of Coal Tar Coating in Tape Form

1565 Lyons Street
Evanston, Illinois



FISHED UP from depths (left), submarine pipeline link is connected to World Glory discharge line (right) for delivery of Kuwait crude to southern California.

slated to receive their first shipment this month.

One line will handle No. 2 oil, the other No. 6 oil. Suppliers will be Esso Standard Oil Co., Sun Oil Co., and American Oil Co.

Northville Dock Corp. will operate the new terminal. It was organized by Samuel M. Bernstein and his son, Harold. The elder Bernstein founded Premium Coal & Oil Co. more than 40 years ago in Brooklyn, and has expended it since into a multicounty success.

The new company is on a 40-acre site in the Northville section of Riverhead. Plans call for eventual construction of 18 storage tanks.

The new Long-Island set-up also emphasizes a second factor in sea berth interest: The offshore berths can handle big tankers.

Although Northville probably won't be unloading tankers of the mammoth class—up to 100,000 tons (PW—Aug.24'56,p20)—the 55-ft. depth of water at the end of its lines could accommodate such monsters. Most traditional ports, such as Northville's neighbor, New York, could not.

The Suez crisis has caused more attention than ever to the economics of big-tanker operation—and to the inadequacy of most conventional ports to handle the new carriers without tremendous dredging expense.

But the fact of the matter is that practically all orders for tankers big enough to skirt the Suez were placed before the crisis. And the need for deepwater tanker terminals will continue no matter what the outcome of the Suez talks.

The record of sea berths in tanker handling is considered excellent by most owners.

Tapline, Tidewater, Standard Oil Co. of California, and other operators of offshore terminals all say they're cheaper to install and cheaper to maintain than conventional terminals of comparable activity.

And none of the sea berth operators polled by PETROLEUM WEEK report any serious difficulties with weather delay, line-breaks, or other possible hazards of the open sea.

The fact remains, however, that sea berths are built only where conventional facilities would be impractical. They have their operational drawbacks.

Some of the difficulties in bringing a giant tankers to berth in an open sea were demonstrated last week when the 45,509-ton Niarchos tanker, the World Glory, made its first crude delivery to Southern California.

The 737-ft.-long vessel was loaded with 318,000 bbl. of Kuwait crude, for delivery through Wilshire Oil Co.'s submarine pipeline off Huntington, Calif.

The vessel had to be brought to a dead stop within 40 ft. of the pipeline connections (two, one for the cargo, the other for bunkers).

Crewmen, however, missed placing a key mooring-line by only a minute or so, and the huge vessel swung past the pipeline marking buoys.

It took several hours of hard work and seamanship to snub the ship back into position. And if the Glory's deck winches had not been adequate, the vessel would have had to haul itself out again on its anchors and make a new, time-consuming approach.

Other drawbacks reported by sea-berth users include these:

- Some tankers, depending upon the size of their winches compared

with the size of the hose they must "fish" from the bottom, have as much trouble landing the hose as a deep-sea fisherman trying to land a tarpon with a trout rod.

• Once connected, the tanker usually must manifold its cargo tanks and pump them out through a single discharge line (or receive from a single cargo line plus, in some offshore installations, a bunkering line, too). Many of the more modern harbor facilities permit multiple connections, taking care of bunkering, watering, and several cargo compartment transfers at once.

While the offshore terminal operator's "tender" often takes water, rope, and a small quantity of other stores to a tanker, the size and timing of this operation is not comparable to service at a traditional port.

One offshore terminal that overcomes most of the problems is the four-line, 6-mi. installation at Ravenna, Italy. The lines terminate above water, on a steel platform with its own derrick and winch for hose handling, plus a telephone to shore.

This type of installation, however, would require the same safeguards to navigation as an offshore oil rig, and a bigger investment than the usual type of offshore terminal.

What's New / IN TRANSPORTATION

There's some talk in Canada about building a second crude line from Alberta to Vancouver—to parallel the existing $100-million line of Trans-Mountain Oil Pipeline Co. No companies have been named. But one paper says the project is approaching the positive planning stage because of "shifting oil economics" in the wake of the Suez crisis.

•

A floating repair dock, capable of handling tankers up to 45,000 tons, is projected for the port of Palermo, Italy. Sicilian Dock Co., which drew up both technical and financial plans, says it will be ready in early 1958.

•

Many Spokane (Wash.) consumers may have to wait until next spring before getting natural gas—even though gas is now being piped to the area by Pacific Northwest Pipeline Co.

The city ordered the utility that's distributing Pacific Northwest gas to backfill all of its pipeline trenches by the beginning of this week, so that the city can get the dirt roads involved ready for winter.

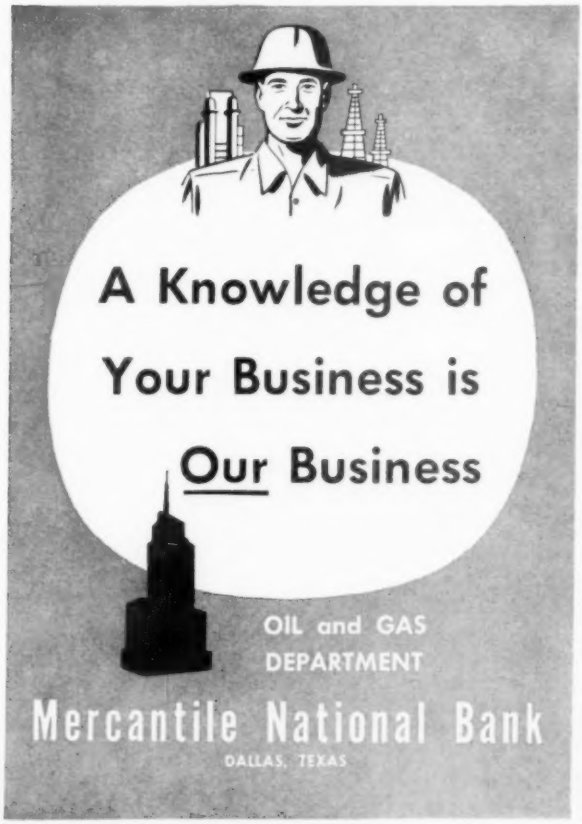
The edict caught Spokane Gas Co. in the middle of a $6-million expansion program pegged to arrival of Pacific gas—with 100,000 ft. of mains scheduled to be laid between now and the end of the year. Now, this pipe laying will have to wait until spring when, the company hopes, the city will let it dig trenches again.

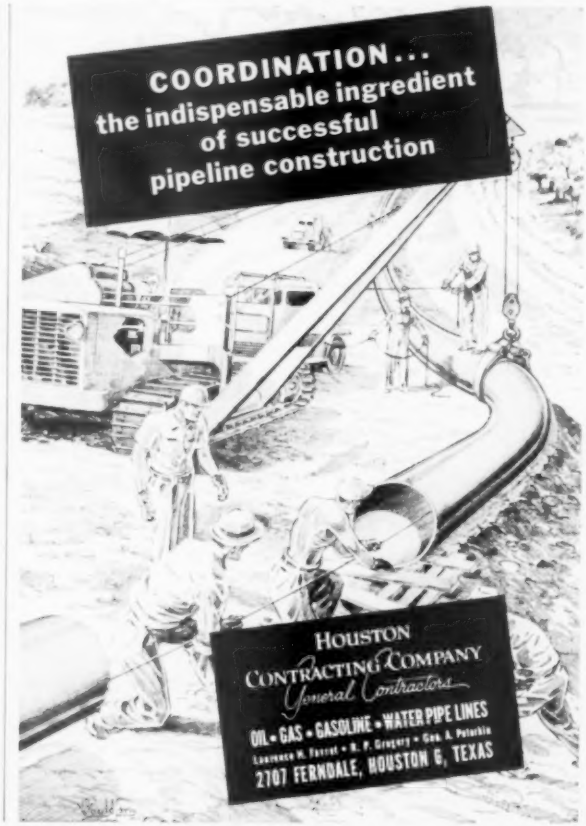
•

British-American Oil Producing Co. will link its Bisti Field (N.M.) crude to the Blanco-to-Wingate line of El Paso Natural Gas Products Co.

Toronto Pipe Line Co., a B-A affiliate, will build a 4-in. gathering system in the field.

The move runs opposite in direction to the Four Corners flow projected by Pacific Northwest Pipeline Corp. (PW—Sep.28'56,p32).





RETAIL TRAINING CENTER, at Lyndhurst, N. J., where Esso will teach future dealer-training supervisors. It's typical of . . .

New Gains in Dealer Relations

Suppliers' steadily increasing emphasis on improving dealer relations is getting new backing this month. Esso Standard Oil Co. is setting in motion a complete revampment of its entire dealer-training program.

Esso has just opened a new central training station (above) at Lyndhurst, N. J., to lay the groundwork for the new program.

At Lyndhurst, future district dealer-training supervisors are being trained in the latest techniques of teaching service-station management. The Lyndhurst "students" are actually carefully-picked men from each of Esso's 50 marketing districts.

After an eight-week course, these "apostles" will be sent back to their various districts to set up and run the dealer-training program at the local level. The Lyndhurst course is taught to a group of 10 or 12 men at a time.

Until now, Esso dealer training was completely a local matter—with little uniformity of what was taught from district to district. On taking a closer look at dealer-training however, Esso decided that a revised, updated, and centrally-coordinated system was needed.

Esso marketing executives hope that new district training stations will be set up in all 50 districts by the end of 1957. Eventually, these district schools will be expected to supply enough well-trained station operators to satisfy fully the needs of the company's expanding marketing program.

Esso's new $1-million program is designed to give dealers "systematic, thorough, and complete training in the complex business of running a service station."

Esso is designing its dealer-training course (it's still in the shakedown stage) to cover every element of successful station operation. It will include principles of selling, automotive design, fuels and lubricants, sales promotion, and personnel and financial management.

Esso marketing minds are also weighing the feasibility of instructing dealer-trainees in company marketing policy. Explanation of pricing (including the use of voluntary allowances and fair trade) may be added to the many other elements studied within the course.

Esso's new dealer-training move is typical of "help-the-dealer" programs now being developed by suppliers right across the country.

The current edition of National Petroleum News, a McGraw-Hill publication, points out that major changes in dealer-relations programs have just been, or soon will be, undertaken by most major suppliers.

According to NPN's nationwide survey, these majors are now working out major changes in their dealer relations programs: Atlantic Refining Co., Cities Service Oil Co., Esso, Frontier Refining Co., Humble Oil & Refining Co., Pure Oil Co., Richfield Oil Corp., Shell Oil Co., Sinclair Refining Co., Socony Mobil Oil Co., The Texas Co., and Tidewater Oil Co.

Suppliers give many reasons for their reemphasis of dealer relations. But probably the most important one is this: "Oil companies are finally beginning to realize that the dealer is the most important link in the (marketing) chain."

G. O. Uhlman, Esso's dealer-training coordinator, puts it in those terms. And most progressive marketers agree. They point out that the dealer represents his supplier to hundreds of consumers. "Our brand," says one marketing executive, "is only as good as the station operator who sells it. Furthermore, when consumers want to know something about the industry, the dealer is the man they ask. A well-trained, well-informed station operator is a tremendous asset."

At the same time, suppliers recognize that the job of running a station has become mighty complex. They point out that the modern dealer must be a good manager, a good salesman, a good bookkeeper, a good trainer, and a good mechanic. Such men aren't easy to find.

As a result, suppliers are looking for —and finding—new ways to help, and to keep, dealers.

New dealer-relations programs are being built primarily around efforts to make the station operator's position more rewarding financially.

Most marketers now realize that dealers—like all businessmen—are primarily concerned with profits. They know that the dealer who earns a good living will be a more contented dealer. And they're convinced that well-thought-out training can show dealers how to make more money.

Suppliers are also working to improve communications with dealers. And that means listening to, as well as talking to, station operators.

The conference technique is becoming more and more popular in dealer training (PW—Jul.20'56,p32). Give-

and-take discussion, marketers feel, is the best way to get ideas across—in both directions.

There are, of course, many approaches to improved supplier-dealer relations.

Here are some of the more recent supplier approaches to the problem:

- Atlantic has set up "dealer advisory panels" in each of its 29 marketing districts to get dealer opinion of company policy.
- Cities Service is using its turnpike stations to give personalized, detailed training to prospective dealers.
- Frontier has placed special emphasis on the "local merchandiser" who visits stations (usually in uniform) to help dealers do a better sales job.
- Humble and Socony are using aptitude tests to learn what qualities make a dealer successful.
- Sinclair is considering a cash loan plan to provide dealers with working capital at low interest rates.
- Shell and Tidewater, like Esso, are increasing the number of their district training stations. Shell is also rewarding 19 of its best dealers with three-day, all-expenses-paid trips to New York.
- Texaco recently announced that it will use the conference technique in dealer meetings throughout its marketing area.

Other suppliers have their own ideas on how to help the dealer. A couple are even said to be considering appointing top management men to handle dealer relations, so that dealers will feel that their problems reach the level where they can be acted on.

To Test FTC 'Allowance' Stand

Clarification of the Federal Trade Commission's controversial policy on voluntary price allowances (discounts off tank wagon price given to stations caught up in price wars) may be on the way.

FTC, after months of investigating gasoline marketing in the southeast, has just filed price discrimination and price fixing charges against Sun Oil Co. and Pure Oil Co. The discrimination charges are based on alleged misuse of voluntary allowances by both suppliers.

According to the commission, Pure recently offered a 1½¢-a-gal. allowance to its 120 Birmingham (Ala.) retail dealers—without offering the discount to other Pure dealers in the state. FTC says that such action is in violation of the Robinson-Patman act.

The commission also charges that Pure got 60 of its Birmingham dealers to agree to sell its gasoline at no more than 1¢ a gal. over the retail price at unbranded independent stations in the area.

Sun is charged with offering an allowance to only one dealer in Jacksonville, Fla., and entering into an agreement with him to set, and maintain, the retail price of gasoline at his station.

The suppliers have 30 days to file answers to the charges. Hearings have been scheduled for Dec. 5 for Sun, Dec. 10 for Pure.

In a policy reversal, FTC announced last winter that allowances given to one dealer in a "competitive area" must be given to all dealers there. Ever since this announcement, suppliers have been wondering exactly what is meant by "a competitive area."

One major supplier cites this dilemma: "Price cutting breaks out in a city, and a supplier grants his dealers there an allowance. Soon dealers ½ mi. outside city limits, who say they are competitive with the city dealers, want the same allowance. If the supplier grants it to them, dealers 1 mi. down the road demand the same tank wagon price. Where does it end?"

The upcoming case—the first under FTC's new allowance policy—is expected to make clear the commission's concept of a "competitive area."

The complaints against Sun and Pure are the first to be made since FTC announced its new allowance policy back in February.

FTC is expected to rule that allowances can be given to meet competition on the wholesale level—but not on the retail level. The commission is now said to hold this interpretation of the Detroit Case: that Standard Oil Co. (Ind.) was within legal bounds in offering several jobbers lower prices in order to keep them from switching to another major supplier who had offered a better price. But FTC lawyers argue that this does not apply to Sun and Pure, since they used voluntary allowances to meet competition on the retail level, and therefore cannot use the good-faith defense.

Other voluntary-allowance complaints may follow. FTC sources have indicated that they are considering other complaints against southeastern marketers, but not for some time.

What's New
IN MARKETING

Standard Oil Co. (Ind.) is extending its suggested price plan to its dealers in Des Moines, Iowa. Standard's plan is already functioning in six other marketing areas formerly plagued by price wars (PW—Jun. 15'56,p28).

Dwight F. Benton, sales vice-president, explaining the company's policy, says: "We, of course, can only recommend that our dealers post our suggested retail prices. What each chooses to do is a matter of individual decision. Our prices to our dealers will be computed at a discount from the suggested resale prices, regardless of the prices actually posted by our dealers."

Many other major-brand dealers in Des Moines, following Standard's lead, are selling at 20.4¢ to 20.9¢ (ex 9¢ taxes).

•

Interest in jobber sliding-scale margins is spreading. The Pennsylvania Petroleum Assn., a jobber group, last week named a seven-man committee to study the new arrangement in jobber margins.

The committee will determine normal tank wagon prices and base margins for the proposed system. It will also recommend margin adjustments due to price fluctuations.

Phillips Petroleum Co. was the first to institute this new margin system (PW—Aug.10'56,p28). Under its plan, jobbers absorb 20% of any drop from "normal" tank wagon prices, and receive 20% of any increase.

Three majors, Standard Oil Co. (Ind.), Continental Oil Co., and Skelly Oil Co., have adopted plans similar to Phillips' in depressed marketing areas of Colorado and Wyoming.

Other majors, including The Texas Co., California Oil Co., and Atlantic Refining Co., have asked for jobber reaction to sliding-scale margins.

•

The Federal Trade Commission has finally dropped restraint-of-trade charges again Warren Petroleum Co. Last winter (PW—Feb.17'56,p31), FTC charged that Warren—through two subsidiaries—had cut LP-Gas prices at Lake Village, Ark., thereby restraining trade there. Now, however, FTC says there is insufficient evidence that "competition on the whole was not injured."

Business in 1957: A Look Ahead

Although Suez may hang over the oil industry as a cloud of uncertainty, petroleum should be able to look forward to at least eight months of high industrial activity—and the demand it creates—right here at home.

After a midsummer slump, industry is back in high gear. And it looks as though it's going to pick up speed at least through next spring.

Industrial production—the index of output in all manufacturing and mining industries—is on the way to an all-time high for the last quarter of this year—144% of the 1947-49 average. And it should push up even more the first six months of 1957, averaging around 147.

* * * *

Of course this is good news for oil. Industry operating at full blast like this provides a firm underpinning of demand for all petroleum products.

This index tells what's going on in both manufacturing and mining, but the biggest part of it is manufacturing—statistically about nine times as important as mining. And of the manufacturing segment, autos and steel make up over 8% of the total index. Furthermore, they are related, and often run up and down together. An increase in auto output will mean an increase in demand for steel—though right now steel is so tight that any increase in auto orders for steel would be almost an embarrassment of riches.

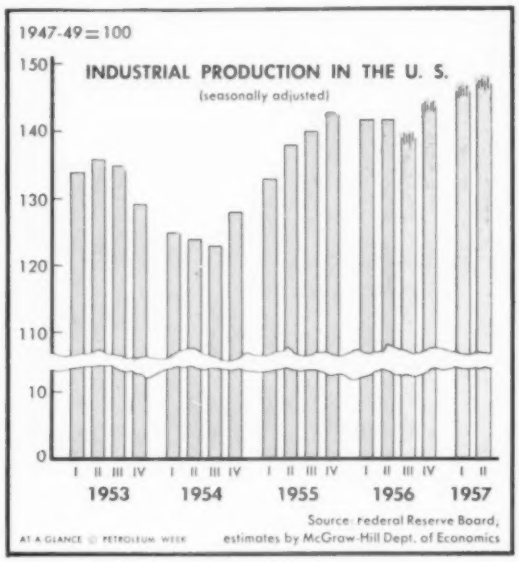
Since the steel strike settlement, industrial production has bounded back from the July dip. Steel mills today are operating around 100% of capacity. And the backlog of orders they have on the books will carry well into 1957—one of the really strong reasons for the bright outlook.

Autos haven't helped the index much—yet. Output fell drastically in August as the industry cleared its stocks and tooled up for the new models. But from now on, the new cars will be rolling off the assembly lines. In the fourth quarter of this year and at least into the first quarter of next, they'll be coming out at a really fast pace—not up to the 1955 record, but still a goodly number (PW—Sep.7'56, p25).

* * * *

Of course it isn't just production for final sales that tilts the index up or down or keeps it level. There's also production for inventory—sometimes the crucial determinant of the direction in which the index is moving.

Over the past year especially, inventory has had a big influence on the level of industry's output. Much of the increase in industrial production in 1955 and the first quarter of 1956 was the result of inventory buildup. It slacked off a bit last spring and summer—and so did industrial production.



Right now, most inventories are at desired levels, or close to them. The big exceptions are steel, machinery, and semifabricated products. Lots more of these things are needed, and will be produced, to fill the warehouse gaps—or at least attempt to fill them.

These are the key factors pointing to an upward jump in production this fall and a high level right through the first half of 1957. It will not equal the sensational rise of 1955, when almost every line was moving up. But it will still be a healthy turn.

* * * *

At this point, the best bet for the second half of 1957 is another rolling readjustment—one part of industry easing off and another forging ahead—but all together operating at a new high plateau.

A further rise beyond the second quarter of 1957 might well be stopped by capacity limitations. A lack of men, money, and materials could put a ceiling on expansion in many lines. No one seems to know exactly just how near capacity industry is right now.

* * * *

This outlook means petroleum may well count on increased demand from the manufacturing sector of business for the next three quarters. But it can't necessarily count on any added increase much beyond next June—just a record high plateau for the summer and fall.

Strong Advertising Program

Helps Build Business for Him

Help get new customers onto the driveway—help get bigger profits for the dealer! This is the aim of the continuous advertising program carried on by The Atlantic Refining Company.

Every Atlantic Dealer, from New England to Florida, benefits from this program. It works, day in and day out, to sell motorists on the quality of Atlantic products and Atlantic service.

Atlantic has long been one of the nation's top sponsors of sports broadcasts and telecasts. That's why Atlantic Dealers number among their regular customers so many baseball and football fans. Atlantic also uses radio and television for daily weathercasts and newscasts. Newspaper advertising, outdoor posters and special sales promotional aids are other important parts of the Atlantic program.

It all adds up to solid sales support for every dealer . . . a hard-hitting advertising program that helps make new friends and helps build bigger profits for Atlantic Dealers everywhere.

THE ATLANTIC REFINING COMPANY

ATLANTIC

CREOLE'S AMUAY REFINERY may be second largest in the world by 1960 (after Abadan), as . . .

Refinery Buildup Rolls in Venezuela

CARACAS—Venezuela is headed toward a refining capacity of more than ¾-million b/d in 1958. It may come close to the 1-million b/d mark by 1960. This would make Venezuela second only to the U.S. as a Western Hemisphere refining nation, and probably third largest in the world, after the Soviet Union.

Latest addition is a 10,000 b/d plant of Richmond Exploration Co., subsidiary of Standard Oil Co. of California, at Bajo Grade, on Lake Maracaibo's western shore.

The $4-million refinery—Venezuela's ninth—has gone on stream to process crude piped from Richmond's Boscan field. It will make No. 2 and No. 4 oil, and asphalt. Richmond's crude production has climbed to around 65,000 b/d, and installations at the plant include lake terminals for loading both crude and products.

The new refinery boosts total rated capacity in Venezuela to 625,000 b/d.

Further expansion by Creole and Cia. Shell de Venezuela, either planned or under way, will bring the over-all figure to at least 775,000 b/d in 1958.

Beyond that, Creole and Shell have additional sizable refinery projects in the offing.

Venezuela refined 25% of its crude production in 1955. But new refining capacity is barely enough to maintain that ratio this year, with output of crude up to nearly 2.5-million b/d.

Another third of Venezuela's production is refined on the neighboring Dutch Antilles islands of Aruba and Curacao. These patches of desert in the Caribbean are thorns in the side of Venezuela, and one provision of the new Venezuelan concessions is aimed at keeping future refining business at home by adding a special tax on shipments of crude to the Dutch Antilles.

Creole's total crude processing capacity, the largest in Venezuela, has just been raised to 294,000 b/d. Further expansion plans may double this by 1960.

Creole is eyeing world market trends and unsettled conditions in the Middle East, and its Amuay expansion program is said to call for 500,000 b/d capacity by 1960. This would make the plant second only to Iran's great Abadan refinery (PW—May25'56, p35). Total investment in the plant is now around $190-million.

Amuay's capacity was increased to 224,000 b/d in August, when a new 70,000 b/d pipe still costing $9.7-million went on stream. Creole expects to let a contract in December for a fourth pipe still, probably a duplicate of No. 3.

The company is also reportedly studying a project to double the 70,000 b/d capacity of its Caripito refinery, in eastern Venezuela.

Shell refines a bigger proportion of its crude in Venezuela than any other company operating here, and it is expanding fast at its Cardon refinery, 15 mi. south of Amuay. Present installations include 150,000 b/d of distillation and 25,000 b/d of cracking capacity, plus reforming and polymerization units and Venezuela's only lube oil palnt, with an output of 1-million bbl. last year.

An 80,000 b/d distillation tower, the refinery's fourth, will go on stream in 1958 to lift crude throughput capacity to 255,000 b/d. A 35,000 b/d cat cracker and alkylation unit will be ready next year. The units, to cost $42-million, will make all grades of avgas.

Investment at Cardon will top $290-million when the present expansion phase is completed.

By 1958 Shell will have an installed capacity of 293,000 b/d, including 38,000 b/d at its 40-year old San Lorenzo refinery, on Lake Maracaibo's eastern shore. Shell will then be refining around 40% of its total crude production.

Other refineries in Venezuela are

Sinclair's El Chaure plant, rated at 35,000 b/d; Texaco's 10,000 b/d Tucupita plant; Phillips' 3,200 b/d paraffin plant at San Roque; and the 59,000 b/d plant at Puerto La Cruz, of Venezuelan Gulf Refinery Co. (owned ⅔ by Gulf Oil and ⅓ by Texaco). A 14,000 b/d visbreaking unit is being added there.

The government plans to have a 3,000 b/d refinery in operation next year in connection with its petrochemical plants at Moron (PW—Jun.1'56, p28).

Socony is also studying a project for a refinery at the terminal of a new pipeline from Barinas to Puerto Cabello (being built jointly with Sinclair), but has made no decision yet.

Additional refining capacity will probably be required eventually under terms of new oil concession. These stipulate that a minimum of 15% of the crude produced from the leases be processed in Venezuela. One company —the newly-formed Venezuelan American Independent Oil Producers Assn. —agreed to refine locally 30% of production from its 24,700-acre block in Lake Maracaibo (PW—Sep.14'56, p54).

Oil Capital Shies from Lebanon

LEBANON—The government was faced with a yawing tax trap of its own making last week. Two different groups of oil interests—one major, the other independent—made it clear they would not invest in projected ventures under the new tax law Lebanon hoped would assure bigger revenues.

One is the internationally-owned Iraq Petroleum Co., which pipes some of its oil from Iraq to the Mediterranean through Lebanon. It has had long-standing plans to increase its pipeline capacity here.

The other is ship owner A. S. Onassis, who has been considering the idea of financing oil exploration in Lebanon by a local company. (PW—Sep. 21'56,p38).

The income tax law in point is retroactive to 1952. It was slapped on foreign-owned oil companies—previously exempt by special agreement. At the time, the government felt that this was another way to skin a cat when a stalemate was reached on revision of pipeline transit agreements.

Iraq Petroleum Co. declared it is maintaining an Oct. 1 deadline on deciding whether to run a projected new pipeline through Lebanon, or to divert it to another route.

A spokesman in Beirut said IPC would shift the route planned for the line if no agreement is reached on the disputed tax.

IPC has three pipelines that carry Iraq's oil from Kirkuk to the Mediterranean. The two smaller of these lines (16-in. and 12-in.) terminate at Lebanon's port of Tripoli, the larger (30-32-in.) at Banias, Syria.

IPC has planned to expand these with a new branch from Homs, in Syria (where the three lines diverge), to Tripoli.

IPC warned Lebanon it would lose fees amounting to $2.5-million a year on transit of 9-million tons of oil if the line is diverted. The obvious alternative terminal is Banias.

The Beirut spokesman denied, however, that IPC would terminate all its activities in Lebanon if no agreement is reached with the government on the tax dispute.

This statement was made after IPC had requested that the government submit the taxation issue to arbitration in accordance with the terms of a 1931 convention between the two. But government authorities last week rejected the arbitration proposal.

Earlier, IPC had submitted a balance sheet listing a net loss for its pipeline operations in Lebanon in the 1952-55 period. This was in answer to the government's demand for an estimate of taxable income under the new law (PW—Aug.31'56,p33).

Now the government is insisting that IPC pay some $7.4-million in tax arrears, plus a $3.7-million fine for making an allegedly false tax statement.

The controversial tax law also threatens to freeze out proffered capital for oil exploration.

According to latest reports, Onassis will follow through with his offer of financing for Cie. Libanaise des Petroles only if the government exempts CLP from the income tax law.

It is now reported that Onassis will take up 55,000 new shares in CLP, worth $1.7-million. This would give him a controlling 73% interest, and increase CLP's capital to $2.3-million.

Philippe Andraos, chairman of CLP's board of directors, said Onassis will make his final decision by late October.

He said that the $1.7-million to be supplied by Onassis is only an initial sum, and that Onassis would be prepared to cover additional costs of exploring CLP's concession.

Lasser & Durand Show Extraordinary Returns from OIL & GAS

Experts Show How to Build Income and Capital at Minimum Risk

NEW YORK, N. Y. —A costly research project into the fabulous field of oil and gas investments has just been completed by two independent experts, the J. K. Lasser Tax Institute and Francis L. Durand. Their findings are of urgent importance now to individuals who seek extraordinary capital growth and high income from relatively small investments—*in addition to tax advantages of a truly unique nature.*

Use this manual for two weeks without cost

Until now there has been no single source of accurate and unbiased information on this enormously rich area of investment. That is why investors should not fail to see a free examination copy of this extraordinary new guide, HOW TO GET TAX PROTECTED INCOME FROM OIL AND GAS INVESTMENTS. Now you need not be an "insider" to participate in the tremendous income, capital building and tax benefits inherent in oil and gas. This manual shows you:

(1) **How to get into oil and gas investments; how investment opportunities develop and how to share in them; acquiring interests; joint operations; development, operation, and payment to investors, etc.**

(2) **How taxes reduce the risk; tax plans which produce maximum net-after-tax returns; family tax plans; organizing oil and gas ventures; assuring your retirement through oil.**

(3) **Actual case histories of oil and gas investments and the potential payoffs (with these to guide you, you can readily decide the best money-making strategy).**

Why miss out on the benefits of this tremendous field? Send today for a free examination copy. Keep it for two weeks, then return it without obligation, or keep it and send only $12.50 plus shipping charges in full payment. (Save shipping charges by remitting $12.50 now—same refund privilege.) Write today to Dept. PW-1, Business Reports, Inc., Larchmont, New York.

Argentina, Brazil Seek Oil Help

- **Both governments' oil monopolies have opened doors to foreign technical aid—mostly on long-term financing.**
- **Both are likely to look abroad for more services and equipment as they strain toward self-sufficiency by 1960.**
- **Government oil chiefs of both countries, in exclusive interviews, tell Petroleum Week their plans.**

I. Argentina

BUENOS AIRES—**"We will not need to send missions to the U.S. and Europe to seek special package credits" to finance Argentina's oil development program, says General Alfredo Intzaurgarat,** president of Yacimientos Petroliferos Fiscales.

In his first exclusive interview since the government oil monopoly was made autonomous, the YPF chief told PETROLEUM WEEK that the entire financing of Argentina's program for reaching self sufficiency in oil by 1959 (PW—May4'56,p32) is already assured.

It is covered, he said, by 143 offers Argentina received last May in response to an international appeal for services and equipment under long-term financing. "There is no doubt that we'll get the money," he said. "It has already been offered to us."

This is the first official statement that the Argentine government sees clear sailing ahead, financially speaking, for its ambitious oil program.

Credit needs have been set at some $250-million for oil and gas pipelines, refinery expansion and construction, storage facilities, and drilling equipment. But, since the various projects are to be financed separately, only the returns on the final tender call will show the exact amount needed to carry out the oil program, Gen. Intzaurgarat says. So far, he stresses, published cost figures are only rough estimates.

The 143 offers made last spring include many duplications. But the long-term financing offers will cover the whole oil program even when these duplications are eliminated.

"Five months have passed since initial offers were made," he notes. "We don't know whether the picture will have changed in such a way as to affect our estimates."

"I don't want to sound over-optimistic," he adds, but the offers were made by "the most important and respected world firms, with which YPF has had a long and excellent commercial relationship."

Tenders for the individual projects slated on the new oil program will be called by mid-October at latest, with deadlines from 90-120 days later, according to the nature of the work involved.

Specifications for installations, equipment, and financing are now virtually complete, the YPF head says. No time will be lost in finalizing the offers, because now YPF knows exactly what it wants. Contracts can then be drawn up without delay. The various projects are scheduled for completion within 2½ years.

"Drilling contracts with foreign firms are definitely planned," the YPF executive says. U.S. and European drilling contractors will be invited to come in under plans entailing partial financing on long term credits extended by the firms involved. Such offers have already been received here, according to Intzaurgarat.

"The Argentine oil entity does not wish to go into the field of petrochemistry," its chief states. "On the contrary, it is our great wish to supply the raw materials to private firms, local or foreign, who are interested in processing it here. Negotiations to this end are currently going on."

II. Brazil

RIO DE JANEIRO—**"The Petrobras objective is to solve Brazil's liquid fuel problem within the next few years," says Col. Janary Nunes,** on completing his first six months as president of Petroleiros Brasileiros, the government oil development monopoly.

The goal—like Argentina's—is an ambitious one. Nunes has already set forth a plan to drill 1,454 new wells in the next four years (PW—Aug. 31'56,p34).

Current fast-rising Brazilian oil consumption is about 200,000 b/d, of which 90,000 b/d are refined products. Domestic crude producing capacity is 20,000 b/d, and the Suez crisis lends a new urgency to the import problem, already a heavy drain on Brazil's currency reserves.

"The company is equipped to carry out this heavy task," the Petrobras chief says. But it is clear that it intends to look abroad for an increasing amount of technical help on a long-term credit basis.

This emerged in a PETROLEUM WEEK interview with Col. Nunes, who outlined Petrobras oil plans while reviewing developments during his six-month tenure as the unit's chief.

Petrobras will aim at increasing Brazil's refining capacity to meet all domestic demand for refined products by 1960, Col. Nunes says.

Next year Petrobras plans to start construction on a new 90,000 b/d refinery in Rio. In addition, it will continue work on expanding the Mataripe refinery near the Bahia fields. Capacity of this plant is now being increased from 7,000 b/d to 37,000 b/d (PW—May4'56,p35).

A French and American group has already offered Petrobras financing and technical assistance on its next refinery, Col. Nunes says. He would not divulge the group involved in what were described as "very tempting proposals" to finance the Rio plant. Unofficial sources here say the interested parties are an American oil company and two banks.

Petrobras has already signed a contract with a French combine, composed of Batignolles-Chatillon-Schneider and Five Lille, that will supply and finance heavy equipment for the Mataripe refinery. The maximum cost of the Mataripe project has been estimated at $22-million, with 8 years' financing at 6%, Col. Nunes says.

Several other foreign companies are also supplying technical aid and services on Petrobras refinery projects. Hydrocarbon Research is serving as technical consultant on refinery operations. M. W. Kellogg Co. is supervising engineering of various refineries. Foster Wheeler Corp. is supervising construction projects. Standard Oil Co. of California is advising on installation of an asphalt plant at Cubatao, as well as on sales and some aspects of administration. The German firm of Friedrich Uhde GmbH is working with Petrobras on construction of special machinery. Cameron Jones, Inc., is serving as technical consultant on oil shale deposits.

Several U.S. firms are already supplying contract crews to Petrobras for its exploration program. Geophysical

INDONESIA comprises the largest group of islands in the world, stretching out along the equator for more than three thousand miles . . . Java, home of the nation's capital, Djakarta, with 54 million of Indonesia's 80 million citizens, is about the same size as New York State. Sumatera, Kalimantan (Borneo), Bali, Sulawesi (Celebes)—these and other exotic islands of the group have a combined land area of about 735,000 square miles. Indonesia's modern economic history goes back to the 15th and 16th centuries, when Portuguese and Dutch traders began developing the spice trade and the "fabulous wealth of the Indies." An independent, democratic republic since August 17, 1945—and the world's third richest country in known natural resources—Indonesia is today spending millions of dollars to modernize and expand its industry, agriculture, and transportation, at the same time increasing its world exports of rubber, petroleum products, tin ore, copra, tea, tobacco, palm oil, coffee, pepper, and sugar.

Standard-Vacuum's part in the development of Indonesia's petroleum industry covers a wide range of operations from geophysical exploration and production through transportation, refining, and marketing of petroleum products. Ninety-six per cent of Stanvac's 14,000 employees in this area are Indonesian nationals.

STANDARD-VACUUM OIL COMPANY

A name that stands for "Progress" in the East

WHITE PLAINS, NEW YORK

AUSTRALIA • BURMA • CAMBODIA • CEYLON • HONG KONG • INDIA • INDONESIA • JAPAN • KENYA • LAOS • MADAGASCAR
MALAYA • NEW ZEALAND • PAKISTAN • PHILIPPINES • PORTUGUESE EAST AFRICA • RHODESIA • SINGAPORE
SOUTH PACIFIC ISLANDS • SOUTH WEST AFRICA • TANGANYIKA • THAILAND • UNION OF SOUTH AFRICA • VIETNAM

Service Inc. has four teams operating; United Geophysical Co. has three seismograph crews; Seismograph Service Co. also has three crews; and Drilling & Exploration Co. has a Petrobras contract for drilling operations. Other Petrobras teams have mixed crews that include foreign specialists.

Brazil's oil chief feels Petrobras has made a significant advance in development of the Bahia basin, which it now believes to be much larger than had been previously outlined.

The basin, which includes the states of Bahia, Sergipe, and Alagoas in the eastern coastal area, is at present Brazil's sole producing region. Its total production for the first six months increased about 30% over the same period last year, to a total of 1.2-million bbl. (about 7,000 b/d). Its current producing capacity is approximately 20,000 b/d.

The number of producing wells has been substantially increased. There are now 29 at Candeias (a field close to the Mataripe refinery), 14 of which have been tested to produce 1,000 b/d apiece. The Dom Joao field has 130 smaller producing wells.

Petrobras feels it can get considerably more production out of the Bahia basin. It is now beginning exploratory drilling operations near Maceio, the capital of Alagoas, Nunes says.

Outside the Bahia basin, Petrobras is concentrating its exploratory efforts in the Amazon basin, and also beginning preparations to start wildcatting in Parana.

Six test wells are now drilling in the Amazon basin, where an oil discovery was made at Nova Olinda a couple years ago. Six geological teams, five geophysical crews, and three gravitymeter crews are now at work in the basin's 154,400-sq. mi. sedimentary area.

In southern Brazil, Petrobras is now setting up a site for its first Parana wildcat, in the vicinity of Candido de Abreu. Three geological teams and one magnetometer crew are now studying what Petrobras considers a potentially interesting area.

Brazil is also interested in the possibilities of extending its oil hunt into Bolivia, within the framework of an already established treaty between the two governments.

Col. Nunes says Brazil's Minister of Foreign Affairs is negotiating with Bolivia, but he did not elaborate on the nature of the discussions.

Insiders here say, however, that Petrobras may become a shareholder with private Brazilian interests in a new company that would apply for Bolivian oil concessions.

Work Starts Soon on New Grants

GUATEMALA—U. S. oil companies were formulating plans here last week to start exploration on new concessions as rapidly as the government grants them.

California Standard's resident manager hopes to have one or two parties in the field by November to start core drilling on the concession its subsidiary is getting near Puerto Barrios, on the Atlantic Coast.

Title to the 67,133-acre award will be held by Cia Petrolera California, Ltd., which will also serve as operator. Five other companies have interests in the grant (PW—Sep.28'56, p28). The group has already agreed on an operation program and an interim budget for the rest of this year. California Standard is now preparing the 1957 operation budget, which it will shortly submit to the other companies for approval.

With government notices of new concession awards coming along regularly, it is clear that Guatemala will wind up with probably the most complicated split of concession interests in the world.

Last week, for instance, the government announced it would award its sixth concession under the new oil law to Sun Production Co. (Sun Oil). The concession, in northern Peten, near the Mexican border, is 592,896 acres, on which Sun settled overlapping bids with Texaco, Tidewater, and Atlantic.

The concession will be operated by Texas Petroleum Co. as part of a unitized operation, on which it plans to have a geophysical party working within a couple months.

Included in the unitized operation is a 743,862-acre adjacent tract, to which the Texaco subsidiary will hold title. Interests in the unitized operation, covering a total of 1.3-million acres, will be split: Texpet, 44.98%; Sun, 27.07%; Tidewater, 22.53%; and Atlantic, 5.42%.

Besides this joint operation, Tidewater and Atlantic each retained part of their original claims.

Earlier, a smaller award was earmarked for Petroleos Guatemaltecos S. A. as the fifth government grant. The concession is 58,500 acres in northern Peten, near the famous Mayan ruins of Tikal. It will be held entirely by Peguasa, according to Mario Novella, who heads the company. It reduced its original claim to settle overlaps with Atlantic, Shell, and Esso.

The company is Guatemalan, and is said to have financial backing from Santa Fe Drilling Co. It also holds a 10% interest in the California Standard award.

Panama Seeks More Oil Capital

As U. S. companies focus new interest on exploring Central America's oil possibilities, Panama's new president aims to bid for a bigger slice of foreign capital to develop his country's oil resources.

Just before he was installed as president on Oct. 1, Ernesto de la Guardia promised to foster specific oil and mining legislation that will encourage foreign investment.

At present Panama has no specific oil or mining laws on its books.

"Laws are being prepared which will encourage development of our natural wealth. Legislation aimed at attracting and helping foreign capital will be included," he said.

There are already four U. S. groups with concession interests in Panama (PW—Sep.21'56,p38). These are Union Oil Co., Cataract Mining Corp., Consolidated American Industries, Inc., and International Oil & Metals Corp.

"I sincerely believe," added de la Guardia, "that with responsible legislative and official backing, given with a view of protecting Panama's interests, but without neglecting the interests of the investors, our natural resources will be investigated and exploited for our mutual gain."

Meanwhile, across the border in Costa Rica, several U. S. majors have been looking into the possibilities of oil concessions. Like Panama, Costa Rica has no oil law on its books.

Concessions are in the form of a contractual arrangement with the government which must have the approval of the Legslative Assembly.

Union Oil is the only concession holder in Costa Rica at present.

Its exclusive concessions cover two entire provinces. One is Limon, which extends along the Caribbean coast, south to the Panama border.

The other is Guanacaste, in northwest Costa Rica, along the Pacific Coast and the Nicaragua border.

How Many Movies Have YOU Produced?

Did you say none? Well, the truth is you have helped make *nine* movies! In fact, you—the men and women of the oil industry—are also the stars of all of them!

Each year your Oil Industry Information Committee produces a new film that tells the story of oil—*your* story. This year's film—"Destination Earth"—is a Technicolor cartoon. It shows why Americans are served far better by our free competitive oil industry than they would be by a government-controlled oil industry.

How can you make your movies pay off for you? *You* can be the person who makes these nine films available to your social or church groups as well as local theaters and schools. For more information about how to obtain these films write to your OIIC district office—or to the address below.

The Film Program is only one of the many ways the OIIC helps win friends for the oil industry and build better public relations for you. By putting OIIC materials to work in your community you'll not only help your industry but you'll experience a great feeling of personal satisfaction as well.

AMERICAN PETROLEUM INSTITUTE
50 West 50th Street, New York 20, N.Y.

Model way to ship bulk liquids

EVERY DAY the "liquid assets" of companies throughout America travel safely and surely in S.H.P.X. tank cars. Present capacity is more than 100 million gallons—and still rising!

There's good reason for this growing dependence upon Shippers' Car Line. As lessor and exclusive sales agent for ACF-built DURADOMES, we offer industry the finest tank cars that roll. They are designed for easier cleaning, maximum insulating efficiency and the best possible application of lining.

As transportation specialists, Shippers' maintains a network of offices and repair shops at strategic locations from coast-to-coast to keep rolling stock on the move... and to assure customers of prompt, dependable service.

Whether you prefer to buy or lease, you can be sure that Shippers' is prepared to meet your *special* requirements every time.

SHIPPERS' CAR LINE

DIVISION OF ACF INDUSTRIES, INCORPORATED

30 Church Street, New York 7, N. Y.

CHICAGO, ILL. • HOUSTON, TEX. • SAN FRANCISCO, CAL. • MILTON, PA. • EAST ST. LOUIS, ILL. • SMACKOVER, ARK. • TULSA, OKLA. • NORTH KANSAS CITY, MO. • RED HOUSE, W. VA.

What's New / AROUND THE WORLD

Wildcat Still Untamed

IRAN—A relief well will be drilled diagonally to National Iranian Oil Co.'s Qum wildcat, which is threatening to blow out again.

The well was recently capped by Myron Kinley, famed Houston oil well firefighter. The valve, reportedly largest of its kind in the world, has not been closed for fear the surface pressure—about 10,000 psi.—would blow the valve and foundation.

Two more valves have been sent for attachment to the main valve in an effort to distribute the pressure.

The oil-gas flow, still at a high rate, is—at the moment—being piped through a line leading about a mile from the well.

A spokesman for the government-owned company said solids coming up with the oil are battering the valve and casing, which extends down about 7,000 ft. He said if the casing wears through, "then the whole well will explode under the pressure."

Low atmospheric temperatures have caused gas to lie close to the ground, increasing danger of an explosion.

To minimize the threat, the flow outlet has been ignited, shooting a spout of flame 50 ft. into the air. The falling temperatures had been causing the gas to settle and drift toward the city of Qum.

•

New Field Found

VENEZUELA—Sinclair has found a new oil field in eastern Venezuela, in the Oficina producing area of Monagas. The discovery well, No. 3 Aguasay, was drilled to a total depth of 14,221 ft. by Venezuelan Petroleum Co., Sinclair's subsidiary.

The company says it encountered "a number" of potential producing sands, totaling over 200 ft. in thickness. In tests of the lower sands, the well flowed 35.1-gravity oil at the rate of 689 b/d, with "thicker and more promising sands" yet to be tested.

The discovery is on a block of 92,600 acres.

Venezuelan Petroleum is considering a connection with a 16-in. pipeline about 30 mi. north, in which it has a one-third interest. In the interim, the company plans to use near-by transportation facilities of other companies to move production from the new field.

The company also has announced completion of its 15th producing well in the Barinas field of western Venezuela.

The 15 wells have tested about 17,000 b/d, but are shut in pending completion of a pipeline to Puerto Cabello, on the coast. The line is being built jointly with Socony, which also has some shut-in production in the Barinas area.

The Sinclair company currently has four rigs operating in development of the Barinas field and hopes to add at least 25,000 b/d from Barinas alone when the line begins operation.

Sinclair and Socony are the only companies to have found production so far in Barinas, where new concessions may be offered soon.

•

First Strike in New Area

COLOMBIA—The first oil has been found in Colombia's northern coastal area in a wildcat drilled to 8,000 ft. by a jointly-owned Texaco-Socony company.

The discovery, near Magangue, on the left bank of the Lower Magdalena River, was revealed in Bogota last week by Colombian Petroleum Co.

The Cicuco-1 well was spudded in during July. In mid-September it flowed 15-18 bbl. per hour on 3/8-in. choke after acidizing, then died down after 18 hours. It started flowing 12-13 bbl. per hour after the choke was reduced to 3/16-in. The oil is 43.5-gravity.

Colpet considers the find significant, but cannot evaluate it yet. It is now preparing to drill a second well in the area.

•

Discount Israel Line

ISRAEL—Persistent reports of a plan to build a pipeline through Israel to carry Persian Gulf oil to the Mediterranean are discounted as totally unrealistic in U.S. oil circles.

The latest reference to the proposal was made in Paris last week by Maurice Lemaire, Secretary of State for Commerce & Industry. He said France would submit the plan to friendly nations to build a line to Haifa from the Gulf of Aqaba off the east coast of Egypt's Sinai peninsula.

The "plan" completely overlooks two major factors. One is the Arab countries' boycott of Israel.

The other is that there is already a pipeline to Haifa that could carry oil from Iraq to the Mediterranean—but doesn't. This is an old 12-in. Iraq Petroleum Co. line from Kirkuk, which has been inoperative since the start of Arab-Israeli hostilities. IPC also has an incompleted 16-in. line from Kirkuk running almost to the Israeli border. It has been considering diverting this line to Sidon, Lebanon.

•

Seek Refinery Capital

TURKEY—Any amendment that may be made in Turkey's petroleum law will be aimed at encouraging investment of foreign capital in a new refinery, it was learned in Ankara last week.

There is no basis whatever to the earlier report that the government was contemplating a change in the oil rights that may be held by private companies (PW—Sep.28'56,p28).

A specific change under discussion now would establish customs immunity under the petroleum law for imported materials and equipment for a projected refinery near Istanbul which may have to use imported crude.

Socony, Caltex, Shell, and British Petroleum, the four principal distributors of oil products in Turkey, are said to be interested in setting up jointly a possible 20,000 b/d refinery near Istanbul.

Elmer E. Batzell, the official consultant to the Turkish Petroleum Administration, is currently in Ankara to discuss a possible amendment that would facilitate such a project.

•

NETHERLANDS—Western Europe's "big inch" moved a step closer to the planning stage last week (PW—Jul.20'56,p36). It was announced that Bechtel Corp will make a study on the technical and economic feasibility of a trans-European pipeline system.

The study was contracted by Sappeur, N.V., a new company set up at the Hague in which all companies may participate who are interested in the supply or refining of crude oil in Europe.

Among those at Sappeur's meeting were: British Petroleum, Caltex, Royal Dutch Shell, Jersey Standard, Socony, Petrofina, and Cie. Francaise des Petroles.

TIDEWATER'S 130,000 b/d Delaware refinery, and . . .

AMERICAN'S new Virginia plant are two reasons why . . .

Refinery Competition Grows in East

Refiners are going to face more competition for the big East Coast markets as more processing capacity comes on stream in the area.

Two new refineries (pictures) will go on stream later this year and early 1957, adding 165,000 b/d of refining capacity to the 1.3-million b/d now in the region (frequently called District 1).

And two additional refineries, both in Rhode Island, are being proposed by two possible newcomers to the refining field—Commerce Oil Refining Co. and Paragon Oil Co.

The big attraction for East Coast refiners is the large demand and the relative nearness of the Atlantic Coast to both Venezuelan and Middle East crudes.

Imported crudes already account for nearly 60% of refinery throughput on the East Coast. Both Tidewater Oil Co.'s Delaware City (Del.) refinery and American Oil Co.'s Yorktown (Va.) refinery operate primarily on imported crude.

And, if it is built, the Commerce refinery plans to use Middle East crude entirely. Paragon has made no specific commitments on crude. But in today's markets, nearly all coastal refiners are having to use some foreign oil to stay competitive.

Commerce has been planning a 30,000 b/d Rhode Island refinery for some time (PW—Feb.24'56,p40). First it was to be built in Portsmouth; now it's scheduled for Jamestown.

Local legal obstacles to the latter location were cleared up last week when the Jamestown town council granted the company a permit.

Harold M. Geller, Commerce vice-president, said this week that groundbreaking would start in December.

Commerce has not yet signed a contract with a builder, though it has a letter of intent with The Lummus Co. Also, Geller says, Commerce has not finalized its plans for process units.

As to product outlets, Geller will say only that Commerce has a "back-to-back" deal. It will buy crude from a major company and sell its products.

Paragon, which has set up a new subsidiary, known as Rhode Island Refining Corp., also is planning a 30,000 b/d refinery (PW—Dec. 2'55,p34). The location will be in Tiverton, which, like Jamestown, is in the Newport area.

The company has set no starting date. J. F. Pritchard & Co. has been making engineering studies. A Paragon official said this week that an "announcement" would be made in the near future.

While East Coast demand, at about 3.4-million b/d, is equal to about 36% of the U.S. total, the sources of supply are many and extend outside the area.

At the end of the war, for example, East Coast refineries were processing nearly half of the products consumed in the area. Currently, the refineries in District 1 only account for a little more than a third of the demand in the area.

Gulf Coast refineries, whose total capacity of nearly 2.7-million b/d far exceeds local demand, ship about 1.7-million b/d of products to the East Coast.

More than 500,000 b/d of imported products, mostly residual fuel, comes to the East Coast.

The first big impact of competition for East Coast markets will come early next year, when Tidewater's 130,000 b/d refinery goes on stream.

As of now, Tidewater doesn't plan to operate its Delaware City plant at capacity. Its own requirements are on the order of 80,000 b/d, but Tidewater is trying to make processing deals to handle crude for other companies.

While the plant is building, Tidewater has had between 50,000 b/d and 60,000 b/d processed for it by others—mostly Gulf Coast refiners.

These include Crown Central (15,000 b/d), Pontiac (10,000 b/d), Southwestern (15,000 b/d), and Delhi-Taylor (10,000 b/d). Sinclair processed 10,000 b/d of foreign crude for Tidewater in the first half; since then it has been running 15,000 b/d, replacing the Crown Central contract.

All of those companies will have spare crude capacity.

And while East Coast demand will expand, many refiners say the Gulf Coast presently offers more advantages for new capacity. The reasons they give are: (1) flexibility to serve either Gulf, eastern, or midwestern markets; (2) cheaper refinery fuel in the form of natural gas; (3) less costly land, taxes, and labor; and (4) nearness to crude supply.

What's New / IN REFINING

Tidewater Oil Co. has completed a 24,000 b/d hydrodesulfurizer at its Avon (Calif.) refinery.

The unit, designed to desulfurize gasoline, is the first to be completed in the refinery's current expansion program.

•

Imperial Oil, Ltd., has awarded contracts to two Canadian firms for constructing a petrochemical and an alkylate plant.

Canadian Bechtel, Ltd., will build the $25-million petrochemical plant on a site adjacent to Imperial's Sarnia refinery. Fluor Corp. of Canada, Ltd., will build a detergent alkylate plant at Sarnia.

•

Continental Oil Co. is asking for bids for building a 3,300 b/d catalytic reformer at its Denver refinery. The unit is planned to be on stream in early 1958.

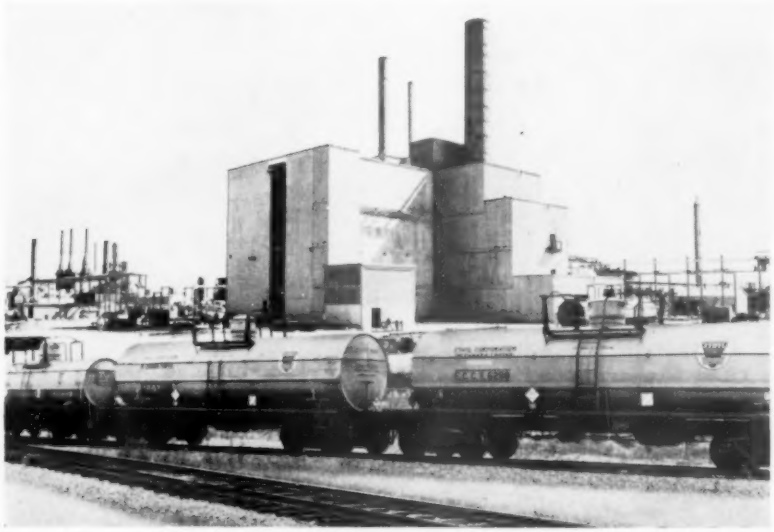
•

General Petroleum Corp. has awarded a contract to build a 12,000 b/d Sovaformer at its Torrance (Calif.) refinery. It is planned for completion next October.

•

American Oil Co. will add a 25,000 b/d crude and vacuum distillation unit for asphalt manufacture at its new 35,000 b/d Yorktown (Va.) refinery.

The company's decision to add the asphalt unit at Yorktown is part of its long-range plans to meet demand for road-building materials created by the federal highway program.



Antiknock Compounds From Canada

Railroad tank cars are carrying the first gasoline antiknock compound ever made in Canada across the country this week. The compound comes from Ethyl Corp. of Canada's new manufacturing plant, which officially went into production Sept. 27. The plant is located on the St. Clair River near Sarnia.

GENERAL REFRACTORIES

A COMPLETE REFRACTORIES SERVICE...

for the Petroleum Industry

LITECAST 50—
A hydraulic-setting insulating castable refractory material, having a density of approximately 50 lbs. per cubic foot. Its extreme light weight and exceptionally low thermal conductivity make it an efficient and economical heat insulator. Recommended for vessel linings and backing for brickwork for other heavier castable refractory materials.

HIGH-STRENGTH BRIK-CAST—
A hydraulic-setting castable refractory material unique in that it contains more bonding agent, which results in a product more resistant to the physical actions of impact, erosion, and load bearing. Used extensively for lining regenerator chambers and catalyst lines in catalytic cracking units.

LITE-CAST 50-M—
A 50-pound density insulating castable, having a high degree of purity, used as a liner in vessels and lines where atmospheres must be controlled, or contamination of internals must be avoided. LITECAST 50-M may be applied in the same manner as standard hydraulic-setting castables.

BRIK-CAST 3000—
A hydraulic-setting castable refractory material, composed of clays and bonding agents having the highest purity, resulting in a product with a high operating temperature (3000° F.), and resistance to reducing atmosphere in carbon monoxide attack. Recommended for sulphur burner chambers and other vessels operating above normal cracking and reforming temperatures.

GENERAL REFRACTORIES CO.
Philadelphia 2, Pa.

The Market Place

AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All Prices as of October 1

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, Cargoes
- Gasoline, 98 oct prem 13.25-13.75
- Gasoline, 92 oct reg 11.5-12
- Kerosine 9.5-9.75
- Heating oil, No. 2 ..... 8.75-9.5
- Gas oil, 48-52 d.i. 8.875-9.375
- Fuel oil, bunker "C" $2.10-2.15

Carribean, cargoes
- Avgas, Grade 100/130 ..... 16.75
- Gasoline, 93 oct research prem 11.75
- Gasoline, 87 oct research reg 10.5
- Gasoline, 79 oct research 9.75
- Gasoline, 70-72 oct motor method 9.5
- Kerosine 9.5
- Heating oil, No. 2 ..... 8.75
- Gas oil, 48-52 d.i. 8.875
- Fuel oil, bunker "C" $2.10

New York Harbor, barges
- **Kerosine ..... 10.85-11.25†**
- **Heating oil, No. 2 ..... 10.35-10.75†**
- Fuel oil, No. 6 ..... $2.80

Okla.-Group 3, northern, shpt, bulk
- Gasoline, 88 oct reg 11.75-12
- Kerosine 10-10.25
- Heating oil, No. 2 ..... 8.875-9.5
- Fuel oil, No. 6 ..... $2.00-2.20

Chicago, bulk
- Gasoline, 91 oct reg 12.75-13.25
- Heating oil, No. 2 ..... 9.75-11.1
- Fuel oil, No. 6 high sulfur 7.7-8.05

Los Angeles, rack
- Gasoline, 84 oct reg 12.1-12.9
- Diesel fuel, PS 200 ..... 9-9.8
- Light fuel, PS 300 ..... $2.65
- Heavy fuel, PS 400 ..... $2.15-2.25

Natural Gasoline, Grade 26-70
- FOB Group 3 5
- FOB Breckenridge, Tex. 4.5

LP-Gas—Propane
- Oklahoma (Group 3) 4.5-5

Penna Lubes
- Bright stock, 25 p. t. 27
- 200 vis. neutral, 25 p.t. 25

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent 95 v.i. 24-25
- Neutral, solvent 200-210 vis 19.75-20.75

Gulf Coast Lubes
- Bright stock solvent, 95 v.i. 25
- Neutral, solvent, 200 vis 21.5

Eastern Hemisphere

Singapore, cargoes
- Avgas, Grade 100/130 ..... 18.375
- Gasoline, 79 oct research 10.625
- Gasoline, 70-72 oct motor method 10.375
- Kerosine 10.125
- Gas oil, 48 d.i. minimum 9.75
- Fuel oil, light $3.40

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9 ..... $2.82
- North Dakota, 36.0-36.9 ..... 2.82
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9 ..... 3.05
  - Gulf Coast, upper and lower, 26.0-26.9 ..... 2.82
  - West Texas sweet, 36.0-36.9 ..... 2.82
  - West Texas-New Mexico intermediate, 36.0-36.9 ..... 2.75
  - West Texas-New Mexico sour, 32.0-32.9 ..... 2.61
  - East Texas flat price 2.90
  - Mirando, 28.0-28.9 ..... 3.11
- Illinois Basin flat price 2.90
- Pennsylvania Grade, Bradford dist, flat price 4.68
- California, Signal Hill, 21.0-21.9 ..... 2.41†
- North Louisiana-Arkansas, 36.0-36.9 ..... 2.82
- Wyoming sweet, 36.0-36.9 ..... 2.75
- Wyoming sour, 32.0-32.9 ..... 2.48

Canada (flat prices, at the well)
- Acheson-Stony Plain (Alta.) D-2, D-3, L.C. 2.54
- Leduc-Woodbend (Alta.) D-2, D-3 ..... 2.60
- Redwater (Alta.) D-3 ..... 2.49
- Daily-Mississippian (Man.) 2.34
- Smiley-Viking (Sask.) 2.26

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 48.0-48.9, Tucupido 3.40
- San Joaquin, 41.0-41.9, Puerto la Cruz 3.04
- Oficina, 35.0-35.9, Puerto la Cruz 2.80
- Tia Juana Medium, 26.5-26.9, Amuay 2.30*
- Bachaquero, 16.5-16.9, Amuay, Las Piedras 1.90**
- Tarra, 38.0-38.9, Cardon 2.91
- Lagunillas Heavy, Amuay, Cardon, Las Piedras, flat price 2.05

Differential per ½ deg grav.: (*) 2.5¢ bbl. (**) 3.5¢ bbl.
†Differential per deg. of grav. varies.

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabian, 36.0-36.9, Ras Tanura 1.97
- Basrah, 32.0-32.9, Fao 1.79
- Iranian, 34.0-34.9, Bandar Mashur 1.91
- Iranian, 34.0-34.9, Abadan 1.86
- Iraq, 36.0-36.9, Fao 1.87
- Kuwait, 31.0-31.9, Mina-al-Ahmadi 1.72
- Qatar, 39.0-39.9, Umm Said 2.06

Middle East, Eastern Mediterranean
- Arabian, 36.0-36.9, Sidon 2.46
- Iraq, 36.0-36.9, Tripoli, Banias 2.46

Far East, (Cargoes, FOB Lutong, Sarawak)
- Seria Light, 37-38 ..... 2.60

KEY TANKER RATES

(Last paid, per long ton, single voyage)

U. S. Gulf-New York, clean ..... (USMC +70%) $4.85[1]
U. S. Gulf-New York, dirty ..... (USMC +60%) $4.56[2]
NWI-USNH, dirty ..... (USMC +57½%) $4.25[2]
NWI-UK/Cont., dirty ..... (Scale +105%) 66/7*
Pers. G.-UK/Cont., dirty ..... (USMC+165%) 126/9*
Persian Gulf-USNH, dirty ..... (USMC +60%) $20.32

**Sterling Owners asked: (1) $4.85/5.70 (USMC +70/100%); (2) $4.63/4.70 (USMC +62½/65%).*

The Market Trend

AT-A-GLANCE Copyright PETROLEUM WEEK

October: A Tempest in a Tank Top

The treacherous month for heating oils—October—is upon us. For the next four, maybe five, solid weeks, inventories will be building. And at the end of the climb, stocks will be high enough for prices to fall.

One extra cargo of No. 2 fuel in October—even one extra barge—can be just the extra straw to throw the balance to lower prices. As supply lines fill up, that one boatload without a home has the same market weight as surplus fuel at the tail end of winter.

There's a fickle human factor, too, in October. This is the time when refiners depend especially on independent resellers to relieve their storage burden on No. 2 fuel. But resellers aren't exactly charitable institutions. If resellers get the notion that refiners can't contain their No. 2 stocks, that's the very moment they will hold off buying and, in a very real sense, aggravate a price break. Witness the price declines in the fall of 1948 and 1949, and the "summer" discounts of 1955 that lasted almost through November.

But heating oils have some powerful allies this month: the gasoline surplus and the weather. Excess gasoline this season is causing refiners to cut back on operations, which will slow the No. 2 build-up and tend to firm prices. Also, the weather is running just about twice as cold as normal this season to date over much of the nation.

The weather can be a real swing factor in heating oils this month, particularly in the East. Nippy mornings immediately put the spurs to so-called "peddler sales"—sales to resellers who own trucks but very little storage. In some cities in the East, peddler sales amount to as much as 40% of the total shipment of No. 2 fuel.

And just let storage-owning resellers get the idea that cold weather really is coming on schedule, and that No. 2 prices may rise, and they will fill their tanks as fast as they can lay their hands on trucks and barges. Quipped one major marketer: "It's a funny business—if prices are strong enough to rise, you suddenly have customers."

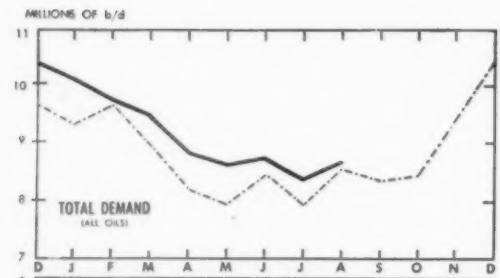
A Fast Start: Eastern distillate markets got off to a fast start this month when Esso Standard made a general 0.4¢ increase on Oct. 1. The advance extended from Maine to South Carolina.

Price Cut On the Range: Farm and ranch gasoline consumers in Texas got a cut of 0.5¢ a gal. late last month. The Texas Co. discontinued its 0.5¢ differential (over dealer tank wagon prices) to this class of trade, thus returning to the pricing pattern of early this summer. Humble started the differential on June 1, and was followed shortly afterwards by Magnolia, Gulf, and Texaco. The others have now followed Texaco back down.

And One On the River: "Thou Shalt Not Pass" reads the mythical sign that Gulf Coast refiners say hangs over the Mississippi River for them between Arkansas and Tennessee. Here's why: Mid-Mississippi terminal operators now are willing to sell gasoline at prices about 0.25¢ below those of the Gulf Coast. This means that upriver gasoline markets now are just about closed off to Gulf Coast refiners.

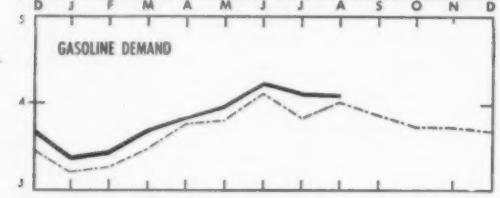
PETROLEUM WEEK'S

Fingertip Figures



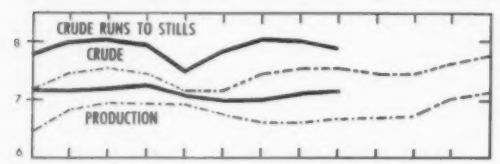
TOTAL DEMAND

Latest 4-week average	9.010
Year ago	8.335



GASOLINE DEMAND

Latest 4-week average	4.288
Year ago	3.885

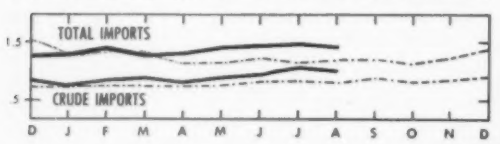


RUNS TO STILLS

Latest week	7.897
Previous week	8.041
Year ago	7.462

CRUDE PRODUCTION

Latest week	7.044
Previous week	7.063
Year ago	6.661

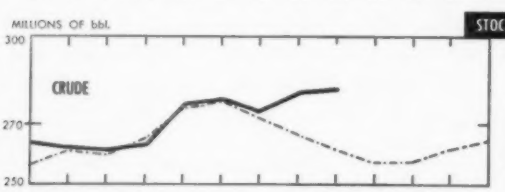


TOTAL IMPORTS

Latest week	1.567
Previous week	1.365
Year ago	1.280

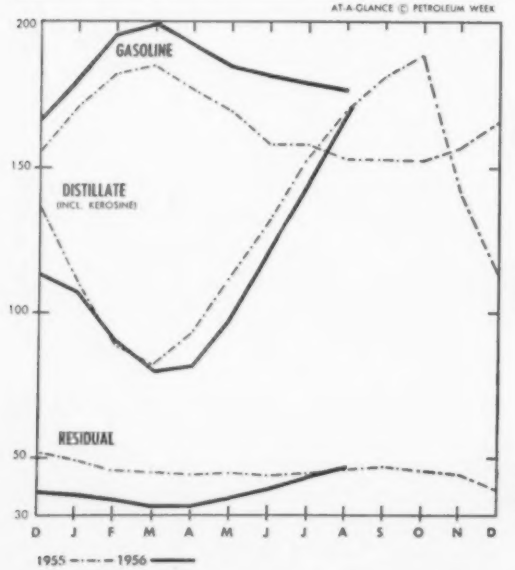
CRUDE IMPORTS

Latest week	1.062
Previous week	.939
Year ago	.829



CRUDE STOCKS

Week ended 9-22	274.6
Previous week	275.3
Year ago	256.6



GASOLINE

Latest week	174.7
Previous week	176.9
Year ago	151.3

DISTILLATES

Latest week	184.2
Previous week	182.5
Year ago	180.1

RESIDUAL

Latest week	47.5
Previous week	47.8
Year ago	46.3

Petroleum demand in the first nine months of the year ran 6.4% above 1955, slightly higher than it's been running earlier this year.

Preliminary figures indicate that total demand (domestic plus exports) averaged 9,068,000 b/d through September.

The biggest increase in demand this year continues to come from middle distillates. Demand for these products in the January-September period averaged 8.4% higher than in the corresponding 1955 period.

Gasoline demand, aided by a strong rate of consumption in September, has averaged 3,884,000 b/d so far this year, up 4.5%.

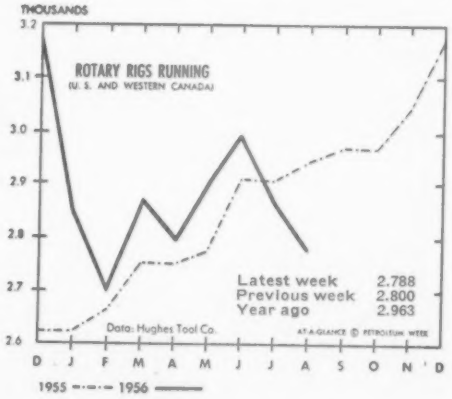
The rate of supply continues to outstrip demand, but the margin declined a bit in September.

Total new supply (domestic output plus imports) averaged 9,318,000 b/d in the first nine months, up 7.5% over last year.

Supply in the first nine months ran 250,000 b/d higher than demand. For the first eight months, supply exceeded demand by an average of 265,000 b/d. Expectations are that for the full year supply will top demand by about 100,000 b/d.

Domestic crude oil production averaged 7,141,000 b/d in the first nine months, up 5.9% over last year. Crude imports averaged 930,000 b/d, up 22%, and total imports, averaging 1.4-million b/d, were up 15.3%.

Refinery throughput in the first nine months averaged 7,942,000 b/d, up nearly 7%. September runs averaged more than 8-million b/d. By last week, though, runs were off 290,000 b/d from early in September.


THOUSANDS
ROTARY RIGS RUNNING
(U. S. AND WESTERN CANADA)
Latest week 2.788
Previous week 2.800
Year ago 2.963
Data: Hughes Tool Co.
AT-A-GLANCE © PETROLEUM WEEK
D J F M A M J J A S O N D
1955 1956

BEN C. BELT (left) and **ROBERT B. ANDERSON** (right) received the Texas Mid-Continent Oil & Gas Assn.'s Distinguished Service Awards at the group's Houston meeting this week. The awards are made annually to a representative of a major oil company and to an independent. Belt, now president of the Houston Chamber of Commerce and chairman of the Texas Research League, is a retired Gulf Oil Corp. vice -president. Anderson, now president of Ventures, Ltd., New York, served as president of Texas Mid-Continent while manager of the W. T. Waggoner cattle and oil estate at Vernon, Tex. He was appointed Secretary of the Navy by the President in 1953 and became Deputy Secretary of Defense in 1954. He resigned in 1955.

SIX FORMER CHAIRMEN of the San Joaquin Valley chapter of the American Petroleum Institute have received meritorious service awards at a meeting in Taft, Calif. They are: **Tom Woodward**, independent producer; **Glenn Kersten**, Western Gulf Oil Co.; **J. B. Wells**, independent producer; **J. B. Wharton**, Western Gulf Oil Co.; **D. G. Kingman**, General Petroleum Corp.; and **A. B. Dooley**, Belridge Oil Co.

W. T. ASKEW (left), president of Sun Oil Co. Ltd., has been elected to the board of directors of Sun-Canadian Pipe Line Co., Ltd. **JOHN C. AGNEW** (right) has been named secretary of the company. He was formerly treasurer and a director of Sun-Canadian. He is also secretary-treasurer and a director of Sun Oil Co., Philadelphia, the parent company. He succeeds **John Blair Moffet**, who has resigned.

BALLIE W. VINSON, formerly president of Exploration Drilling Co., at Tulsa, has been promoted to chairman of the board. **B. E. Groenewold** succeeds Vinson as president. Groenewold was formerly vice-president and general manager of the firm.

W. J. TRAVERS, vice-president of Richfield Oil Corp., will head the company's new production department, which will combine the activities of Richfield's present exploration and production departments. **W. K. Krieger** will manage the new department's field operations; **Mason Hill**, its exploration; and **F. E. McPhillips**, lands and leases.

W. N. JONES has been named district landman, and **D. D. ANDERSON** district geologist, at Phillips Petroleum Co.'s newly established Abilene (Tex.) district land and geological office. The new district comprises 16 counties in the Abilene vicinity. Jones joined Phillips in 1945 as a scout at Amarillo, Tex., and was a senior leaseman at Amarillo prior to assuming the Abilene post. Anderson joined Phillips in 1950; he came to Abilene from the Wichita Falls (Tex.) division, where he was a subsurface geologist.

F. C. McLARTY has joined Plymouth Oil Co. as assistant chief civil engineer at the company's Sinton (Tex.) headquarters. He was formerly a civil engineer for The Goldston Co.

ORVILLE S. CARPENTER has been named president of Texas Eastern Transmission Corp., Houston. Carpenter, formerly vice-president and controller, replaces George T. Naff, who has been elected vice-chairman of the board.

A. H. WEYLAND is the new vice-president in charge of the production division of Arkansas Fuel Oil Corp. He was formerly production division manager.

HAROLD M. SEELEY has been promoted to supervisor of the Gulf Coast area of Seaboard Oil Co., at Dallas. He was formerly district geologist for the company at Corpus Christi. **Robert W. Luker**, of the Dallas office, will move to Corpus Christi to replace Seeley.

W. A. M. GREEVEN has been elected a director of Esso Export Corp., overseas marketing affiliate of Standard Oil Co. (N. J.). Greeven is deputy coordinator of marketing for Jersey Standard. **Thomas E. Monaghan** has been named the new general counsel for Jersey. He succeeds **E. F. Johnson**, who is retiring.

HAL FINNEY is Union Oil Co.'s new district superintendent in Lafayette, La. **Francis J. Barker** succeeds him as district superintendent in charge of production at Coalinga, Calif. Barker was formerly senior engineer for the company's division office at Bakersfield, Calif.

L. WENDELL KNOX, Rupp-Ferguson Oil Co., has been elected president of the Wichita Landman's association. Other officers elected are: **Clinton White**, Midstates Oil Corp., vice-president; **Hap Blazer**, Cooperative Refinery Assn., secretary; and **Bernard Brack**, Ben F. Brack Oil Co., publicity director.

DUNCAN LITTLE has been moved to Regina, Sask., as a scout for Hudson's Bay Oil & Gas Co., Ltd. He succeeds **William Galloway**, who has been transferred to the company's geological department.

GEORGE E. SCHULTIS has been appointed assistant manager of Imperial Oil Ltd.'s Regina (Sask.) division. He was formerly manager of Imperial's Peace River Explora-

CLASSIFIED

Model 124 **MURPHY DIESEL ENGINE**
6 cyl., 232 h.p. @ 1200 r.p.m.; heat exchanger twin disc enclosed clutch; flexible coupling; extended shaft with two outboard bearings.
NEW — NEVER BEEN USED — FOR SALE AT LESS THAN DEALER'S COST
TRI-STATE EQUIPMENT CO., INC.
520 Mulberry Jackson 5-3716
Memphis, Tennessee

PROFESSIONAL SERVICES

JAMES P. O'DONNELL
Consulting Engineer
Professional Engineering for the Petroleum and Process Industries
39 Broadway, New York 6, N. Y.
Beaumont, Texas Tulsa, Oklahoma

VENEZUELAN OIL SCOUTING AGENCY
Reports—Maps—Newsletter
Cable: VOSA, Caracas N. VanMiddlesworth
Mail: Apartado 3963 Phone: 54 48 02

PERSONNEL MANAGERS

LOOKING FOR ENGINEERS . . . TECHNICIANS ?

Write for free copy of

"RESERVOIR OF ENGINEERS AND TECHNICAL MEN"

THE engineers and technicians you want to reach are gathered in convenient, compact groups—as this 16-page booklet points out.

It keys the job titles these men hold to the McGraw-Hill publications they read for on-the-job information. It explains how you can make contact . . . channel, concentrate your employment advertising to just the men with the job qualifications you want.

Write for your free copy to
Classified Advertising Division
McGraw-Hill Publishing Co., Inc.
330 W. 42nd St., N. Y. 36, N. Y.

tion district office in Dawson Creek, B. C. **James R. Scholdice** has been named assistant to the exploration manager of the Regina division; he was previously exploration manager, eastern division, at London, Ont.

DR. CHARLES GARDNER DODD has been chosen to fill the Erie P. Halliburton chair in petroleum engineering at Oklahoma University, Norman, Okla. Dr. Dodd's position, the first professorship of its kind at the university, was made possible by a grant from Halliburton Oil Well Cementing Co. in honor of the founder of the company. Dr. Dodd formerly was associate professor of chemistry at Lehigh University.

STANDARD OIL CO. (IND.) has announced the election of three vice-presidents; **Samuel A. Montgomery**, in charge of manufacturing; **Thomas E. Sunderland** general counsel; and **Joseph K. Roberts**, in charge of research and development. **George V. Myers** and **Jesse C. Ducommun** have been appointed directors. **Dr. Max G. Paulus** is retiring as vice-president in charge of manufacturing and a director.

CLARENCE DREILING has been promoted to drilling superintendent for Hewit-Gulick Drilling Co., at Denver, Colo. He has been toolpusher for the company since 1952.

PAUL R. BEACH, veteran oil and gas attorney from Kansas City, will head the Outer Continental Shelf Office, at New Orleans, for the Bureau of Land Management. He succeeds **Sidney L. Groom**, who resigned to open a law office in Houston.

REESE H. TAYLOR, board chairman of Union Oil Co. of California, has been named a director of Westinghouse Electric Corp. He is also a director of the American Petroleum Institute.

P. C. SPENCER, Sinclair Oil Corp. president, has been appointed a director of Texas Pacific Coal & Oil Co., Ft. Worth. Sinclair holds about 30% stock interest in Texas Pacific, A domestic crude oil and gas producer.

ADVERTISERS IN THIS ISSUE

This index is published as a convenience. Every care is taken to make it accurate, but PETROLEUM WEEK *assumes no responsibility for errors or omissions.*

Air Preheater Corp.	19
Atlantic Refining Co.	39
Baroid Div., Nat'l Lead Co.	3rd cover
Business Reports, Inc.	41
Dowell, Inc.	4
Drilling Specialties Co.	14
Electromotive Div., G.M.C.	27, 32
General Refractories Co.	49
Houston Contracting Co.	35
Hughes Tool Co.	11, 12
Lone Star Steel Co.	22
Mercantile Nat'l Bank of Dallas	35
National Aluminate Corp.	7
Nitrogen Div., Allied Chem. & Dye Corp.	2nd cover
Oil Industry Information Comm.	45
Petroleum Equip. Suppliers Ass'n	21
Republic Nat'l Bank of Dallas	3
Roebling's Sons Corp., J. A.	2
Shippers Car Line Corp.	46
Sinclair Oil Corp.	1
Standard Vacuum Oil Co.	43
Tapecoat Co.	34
Timken Roller Bearing Co.	4th cover
W-S Fittings Div., H. K. Porter Co., Inc.	8

PROFESSIONAL SERVICES 54

CLASSIFIED ADVERTISING
F. J. Eberle, Business, Mgr.

FOR SALE 54

PETROLEUM WEEK REPRESENTATIVES

Atlanta 3 — M. H. Miller
801 Rhodes-Harverty Bldg.
Walnut 5778

Boston 6 — Edward A. Callahan, Jr.
350 Park Square Bldg.
Hubbard 2-7160

Chicago 11 — D. O. Hanson
W. F. Holbrook
520 North Michigan Avenue
Mohawk 4-5800

Cleveland 15 — J. E. MacArthur
1510 Hanna Bldg.
Superior 1-7000

Houston 25 — David G. Sawyer
724 Prudential Bldg.
Jackson 6-1281

Los Angeles 17 — Peter S. Carberry
1125 W. Sixth St.
Madison 6-9351

New York 36 — Edward A. Callahan, Jr.
Donald R. Thompson
330 West 42nd Street
Longacre 4-3000

Philadelphia 3 — W. A. Potter
Architects Building
Rittenhouse 6-0670

San Francisco 4 — William C. Woolston
69 Post Street
Douglas 2-4600

Tulsa 19 — J. A. Hartley
209 Constantine Bldg.
611 South Boston
Gibson 7-5594

England, London E.C.4 — Herbert Lagler
McGraw-Hill Co., Ltd.
95 Farrington St.

Other Oil Industry Personnel Changes:

Company:	To:	From:
American Oil Co.		
Robert O. Brown	Mgr, eng, construction, marketing dept, New York	Asst chief eng, New York
George E. Blatchley	Retiring	Mgr, eng, construction, marketing dept, New York
Apache Oil Corp.		
Richard J. Dent	Dist landman, Tulsa	
Baker Oil Tools, Inc.		
John H. Pullin	Branch mgr, Williston, N. D.	
Bethlehem Supply Co.		
R. E. Ligon	Store mgr, field rep, Sweetwater, Tex.	Field rep, Sweetwater
E. T. Broughton	Machinery sales rep, Great Bend, Kan.	
S. R. Bowen & Co.		
Ben Gillam	Sales, service eng, Edmonton, Alta.	Sales, service eng, Santa Fe Springs, Calif.
California Co.		
D. L. Ziegler	Geologist, seismograph crew, Montana, western North Dakota	Geologist, Bismarck, N. D.
Hank Smith	Geologist, Bismarck	Geologist, seismograph crew, Montana, western North Dakota
Cyril Harvey	Geologist, Bismarck	
John W. Scott	Div construction eng, Natchez, Miss.	Construction eng, New Orleans
Core Laboratories, Inc.		
Edward E. Weadock	Mgr, Craig (Colo.) office	
Dowell Inc.		
B. Owens	Service eng, Glendive, Mont.	Service eng, Williston, N. D.
Esso Standard Oil Co.		
Dennis C. Shea	Asst mgr, employee rel dept, New York	Asst mgr, employee rel, mfg dept, New York
General Petroleum Corp.		
Frank E. Bartholomew	Safety supt, Los Angeles	Fire prevention technician, Los Angeles
Robert W. Stickrod	Dist sales mgr, Los Angeles	
International Petroleum Co., Ltd.		
Bryson M. Filbert	Mfg advisor, Coral Gables, Fla.	Chem prod coordinator, Humble Oil & Refining Co., Houston
Taylor E. Little	Employment supervisor, Coral Gables	Employee rel adviser, Carter Oil Co., Oklahoma City
Jones & Laughlin Supply Div.		
Jack A. Beaird	Store mgr, Tulsa, Okla.	Store mgr, Sherman, Tex.
T. P. Dellone	Store mgr, Sherman, Tex.	Storeman, Sherman
P. J. Fischer, Jr.	Sales rep, St. Elmo, Ill.	Sales rep, Sherman
T. G. Row	Sales rep, Rangely, Colo.	Store mgr, Rangely
Clifford G. Gardner	Sales rep, North Texas	Storeman, Winfield, Kan.
Magnolia Petroleum Co.		
Paul E. Irwin	Pet eng, Oklahoma City	Pet eng, Lindsay, Okla.
Ohio Oil Co.		
William C. Sylvester	Asst div pet eng, Tulsa	Dist supt, Tidewater Oil Co., Saskatchewan
Shell Oil Co.		
T. S. Mitchel	Houston prod dept	Chief mech eng, Denver prod dept.
T. S. Zajac	Chief mech eng, Denver prod dept	Gas mgr, Calgary, Alta.
Shell Pipe Line Corp.		
J. E. Condon	Mgr, purchasing stores, Houston	Mgr, purchasing stores, Shell Development Co., Emeryville, Calif.
Sinclair Refining Co.		
J. A. Jacobs	Sales promotion mgr, Rocky Mt. dist, Denver,	Asst sales promotion mgr, Denver
Gene Reid Drilling, Inc		
Gene Reid, Jr.	Geologist, pet eng, Bakersfield, Calif.	Exploitation eng, Shell Oil Co., Ventura, Calif.
Standard Oil Co. of California		
Wilbur H. Haines, Jr.	Asst dist sales mgr, Spokane, Wash.	
Tex-Tube, Inc.		
W. A. "Bill" Samis, Jr.	South Texas dist mgr, Houston	
Tidewater Oil Co.		
Thomas L. Roberts	Supervisor lands, leases, San Francisco	
New Ventures—		
R. W. Biggart, Robert A. Crane, Jr., William H. Hart	Geo-Log Strictures, Inc., Tulsa	
William Martin, Chet H. Jameson, Jr.	Martin-Jameson Oil Co., Tulsa	
C. W. Trainer	Ind operator, Hobbs, N. M.	Asst to area mgr, northwest Texas, Schlumberger Well Surveying Corp.
A. Rex Watkinson, Jr., George Coleman	Crescent Oil Well Supply Co., Tulsa	

Drilling Contractors Hold the Key To Solution of Their Own Problems

WHEN THE DRILLING CONTRACTORS get together at their annual meeting in Fort Worth next week, the chief topic of conversation will be that of rising costs vs. declining prices.

The cost-price squeeze on drilling contractors is not new. It has been a problem for some years, but it has become a more serious one recently. As pointed out in the story on page 20, the problem is such today that some contfactors are not bidding on jobs where the profit margin promises to be small or nonexistent.

BRIEFLY STATED, the economic facts developed by the American Assn. of Oilwell Drilling Contractors are these: Since 1941, drilling contractors' labor costs have more than doubled, and equipment and miscellaneous costs are up nearly as much. All told, the association says, rotary drilling costs now are double those of 1941.

On the other side of the ledger, drilling contract prices (on a footage basis) have declined by about 5% since 1941. And the rate of penetration (the best measure of efficiency), while up 88% over 1941, has remained static for the past three years.

The only encouraging statistic developed by AAODC is that average drilling time per well has declined by 44%. But, like the improved penetration rate, average drilling time has remained steady in the past three years.

That drilling contractors generally are not in a worse cost-price squeeze than they find themselves now is due to improved efficiency. The improved efficiency, as measured by the improvement in penetration rates, is due to better trained employees on the rigs, better equipment, and better techniques

IT WOULD CERTAINLY APPEAR that the solution to the contractors' big problem of the cost-price squeeze is to strive for even greater efficiency.

While penetration rates have leveled off during recent years, there is no reason why they can't move upward again. And again, the avenues of approach are through more efficicent personnel, equipment, and techniques.

The approach to these three avenues will have to be a cooperative venture among AAODC, equipment suppliers, and individual contractors.

The association is continuing its efforts for better-trained personnel through several schools for drilling crews. Also, AAODC has started holding a series of conferences for drilling executives—a program that is meeting with considerable success in making a close study of all the problems before the industry and in coming up with possible solutions. The matter of the technique of preparing bids—which sometimes can mean the difference between profit and loss on a job—is one of the problems studied in these conferences.

And there is evidence that equipment suppliers are continuing their research on better tools for the drilling industry. Lighter-weight, easier-to-move rigs, better bits, and such new techniques as the turbodrill are being tested.

BUT IN THE FINAL ANALYSIS, the real solution to the problem lies with the individual drilling contractor. As better training techniques and better tools become available, it will be up to him to take advantage of them, and to use them as avenues to increased efficiency.

these Baroid originals

stacked in your favor

. . . for economy

For a trouble-free mud program, use Baroid's drilling mud chemicals . . . field tested for years in your own area.

MAN-TAN — saves you money — specifically developed to cut your tannin thinner costs as much as 35%. Low-cost Man-Tan has proved to be a satisfactory replacement for quebracho.

CARBONOX — Baroid's fast-selling mud thinner and emulsifier used in treating and emulsifying normal pH, high pH or high pH lime muds. An exclusive Baroid development, unusually resistant to salt water contamination; exceptionally efficient at high bottom-hole temperatures.

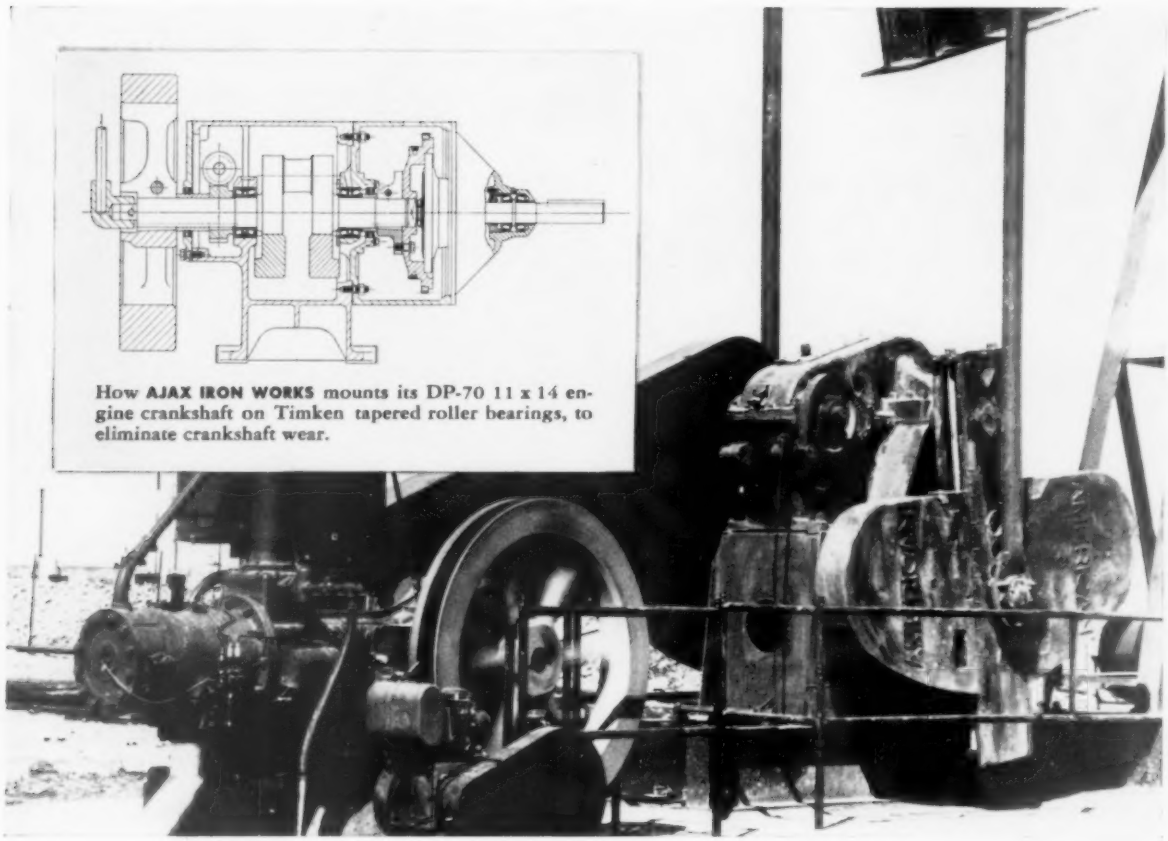
Call your Baroid engineer for best results on your wells.

BAROID

BAROID DIVISION NATIONAL LEAD CO.
Main Office: P. O. Box 1675, Houston 1, Texas

More horsepower, less maintenance

...crankshaft mounted on TIMKEN® bearings



How **AJAX IRON WORKS** mounts its DP-70 11 x 14 engine crankshaft on Timken tapered roller bearings, to eliminate crankshaft wear.

IMPROVED cylinder and piston design on Ajax Iron Works' heavy-duty DP-70 11 x 14 engine boosts horsepower 27%, at 350 rpm. Features include a direct drive rotary lubricator, rotary magneto, better counter-balancing, and power take-off type of clutch, and a crankshaft mounted on Timken® tapered roller bearings.

Timken bearings hold the crankshaft in correct alignment. Tapered construction lets Timken bearings take radial and thrust loads in all combinations. Geometrically designed to give true rolling motion, Timken bearings are precision-made to conform to their design. As a result, Timken bearings normally last the life of the engine.

As Ajax has learned through countless hours of trouble-free performance, Timken bearings permit virtually *unattended* engine operation. Full line contact between rollers and races means extra load-carrying capacity—and Timken bearings make closures more effective in sealing out dust, dirt and moisture, keeping lubricant in, by holding shafts and housings concentric. Maintenance is greatly reduced.

When you build or buy oil field machinery, look for the trade-mark "TIMKEN" stamped on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

TIMKEN TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS ROLL THE LOAD